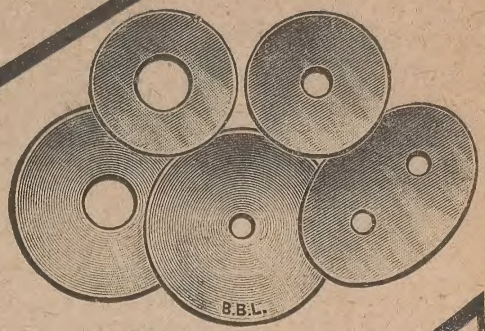
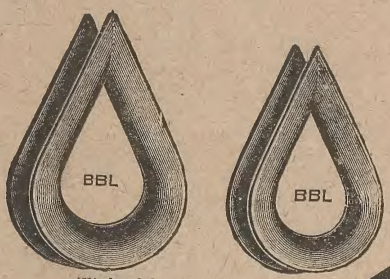
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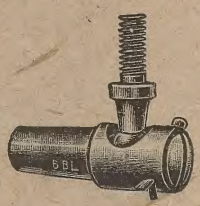
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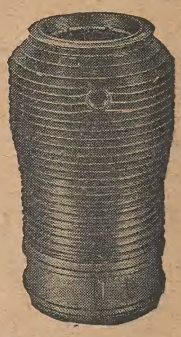
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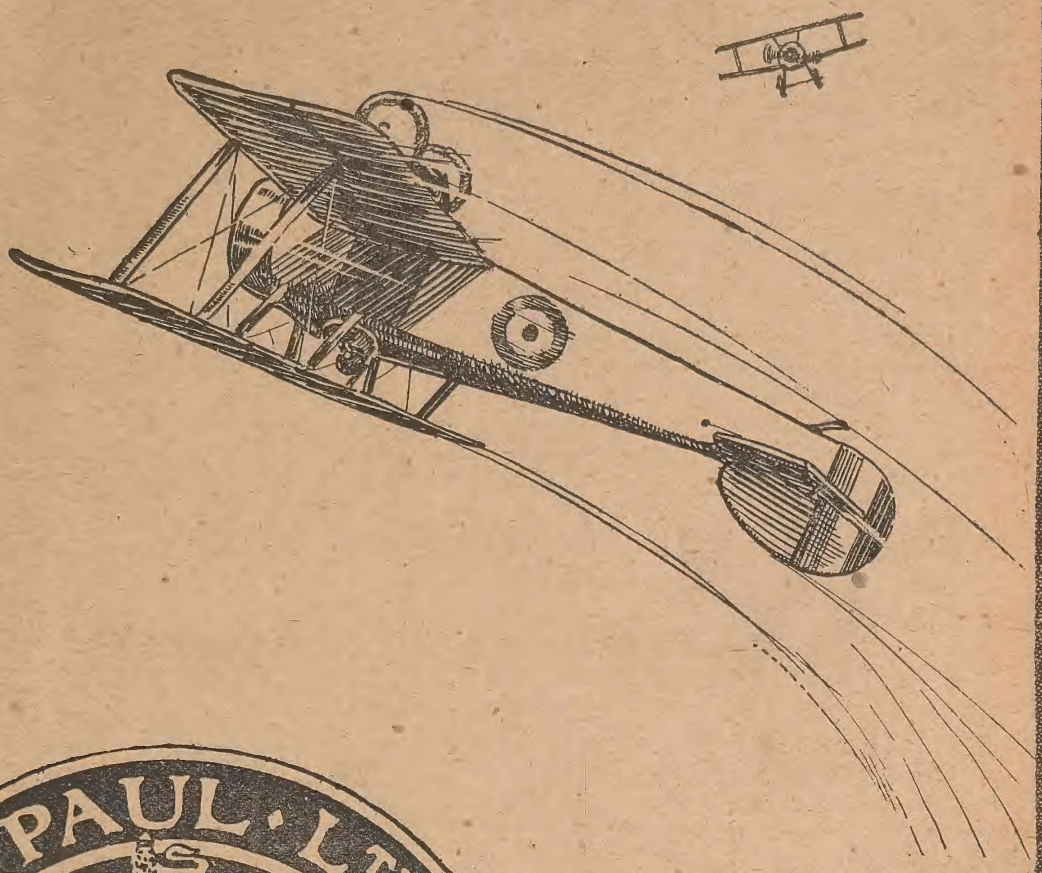
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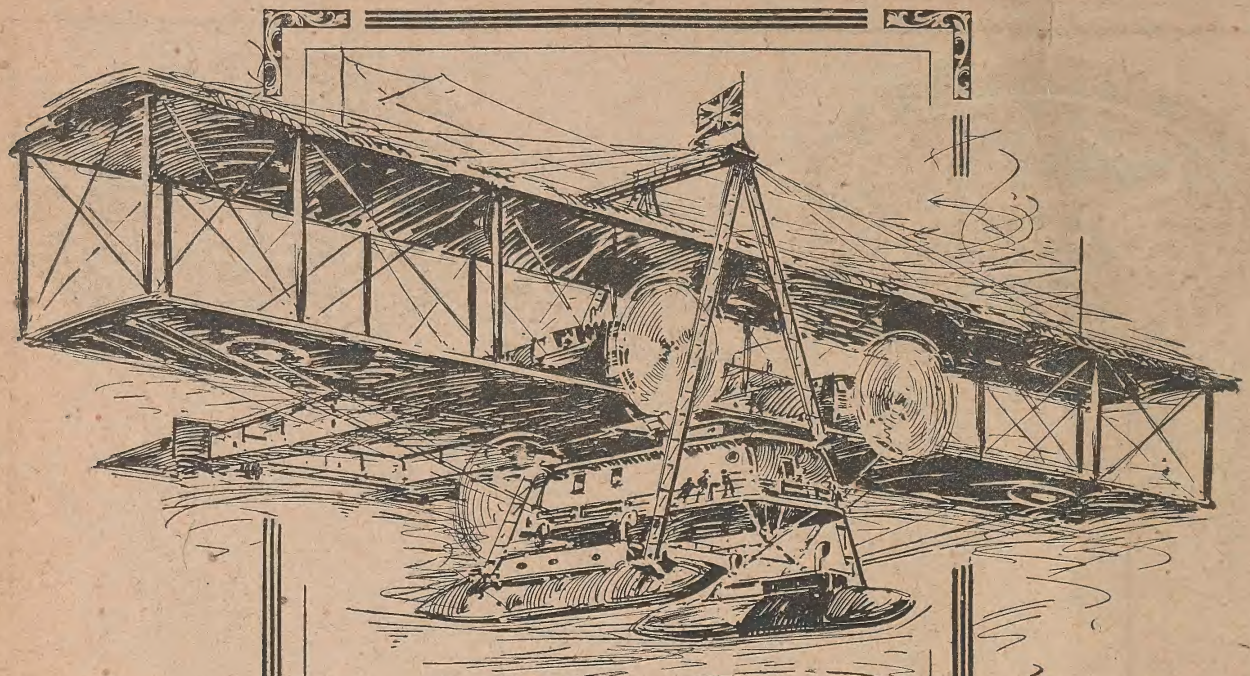
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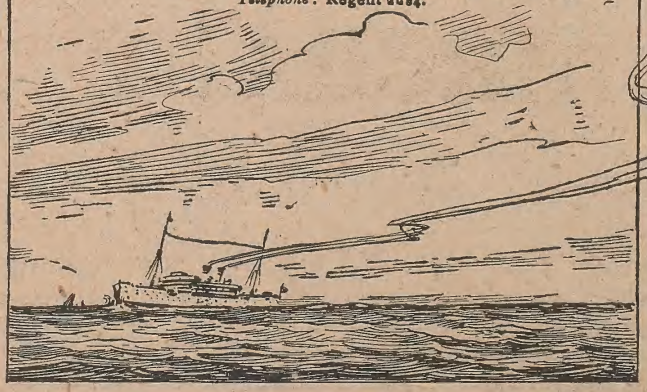
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ON THE END OF THE WAR AND WAR IN THE AIR.

News from the Continental and Oriental war areas has been so satisfactory during the past few weeks that it seems well to review the situation in case a spirit of undue optimism should cause a slackening of effort on the part of those whose duty it is to see the war through to a victorious finish. We in this country have heard and read a lot of tosh about Leagues of Nations, a Clean Peace, War Aims, and such palaver. Therefore the first and most important thing to remember is that we can have only one War Aim. That is to beat the Hun. When we have done that we can begin to talk about the rest.

The Allied advances in the Balkans and the Bulgarian unconditional surrender seem to offer a reasonable prospect of shutting down the war in the Near East. The Turk has never been keen on fighting the British Army; in fact the old Turkish officers and men, with the memories or traditions of the Crimean War, have never been able to understand why they are fighting us, and the ordinary Anatolian Turk is a decent poor soul, even if, as a witty Irishman remarked, he is apt to lose his head when you show him an Armenian.

It is true that the rank and file of our prisoners in Turkish hands have been badly treated, but it is the bad treatment of sheer neglect and not deliberate brutality, as is the case in Prussian prison-camps. It is necessary to understand that the Turk, being an Oriental, draws a very clear distinction between officers and men. The men in the Turkish Army itself are, in bad times, fed and treated but little better than our men who are prisoners in their hands. Also, the whole of Turkey is on the verge of starvation, and so hardships for prisoners are inevitable.

Peace between the Allies and Bulgaria, which must cut communications between Germany and Turkey, will give the Turk a chance of making an honourable peace himself, and peace with Turkey could, one believes, be hastened very considerably by a little judicious bribery. The cost of a day's war in hard cash, offered to the Turkish political chiefs, would probably settle the whole business.

Austria's Offer.

The Austrian peace offer, though our doped Press has jeered at it as a camouflaged German trick, is in all probability none the less genuine. We have never had any quarrel with Austria, and still less with Hungary. The Austrian is a gentleman, though over-ridden and misled by the Prussian, and it seems quite possible that judicious diplomacy might cut Austria adrift from Germany.

It is true that Austria did not behave nicely to Italy before the war, and that Italia Irredenta remains to be redeemed. Still, Austria in her present state of mind might be induced to do the right thing by Italy, so long as she retained her Adriatic ports.

Similarly Hungary, generations ago, grabbed a large chunk of what is properly Roumania. This matter might also be arranged amicably in return for concessions in other directions. One gathers, for example, that certain parts of what was once Russia are populated largely by Hungarians. The Hungarian is a wild half-savage person, well content with his own country and without territorial ambitions outside it so long as he is not misguided by semi-German politicians, and a reasonable working arrangement with Roumania, as regards commercial relations, would probably square Hungary without much trouble.

Small nations must be prepared to make concessions if they are to live amicably with their bigger neighbours, and the smaller Balkan peoples, such as Roumania, Bulgaria, Servia, and Greece, can no more be permitted to raise rows on their own account than Ireland or Scotland or Wales can be permitted to raise agrarian or shipbuilding or coal-mining or railway troubles with England.

The Great Danger.

Now, if peace can be made with our old Ally Turkey in the near future and with Austria-Hungary soon afterwards, there is the danger that the Allied peoples—though not their military chiefs—may slacken their efforts to beat Germany. Any such slackening of effort, even to the extent of diverting overmuch attention to after-the-war problems, would be a fatal mistake.

Germany alone and unsupported, concentrating all her energy on self-defence, will still be a very dangerous enemy. Germany driven out of France, and even out of Elsass-Lothringen, with all her forces concentrated along the line of the Rhine, would be a more difficult object to attack than the German Army strung out along the Siegfried or Hindenburg line.

Doubtless the Allies' High Command would find a way of crossing the Rhine, but it would be a long and costly proceeding. It is well to remember that the German, as distinct from the Prussian, is our own nearest blood-relation. There is less moral and temperamental difference between an Englishman and a Saxon, or between a Lowland Scot and a Hanoverian or Brandenburger, than there is between any of them and a Highlander or Irishman or Welshman or Cornishman. The West German is as obstinate, as stupidly brave, and as stolidly enduring as our own people.

Right through the war the West Germans have fought well, even when irritated by their Prussian overlords, who are their masters by virtue of their cleverness of brain and not because they have ever beaten the West Germans in battle. It is reasonable to suppose, then, that if the German Army is driven out of France, and consequently has to retreat out of Belgium, the West Germans will put up a very fine fight when called upon to defend their own country against an invading army.

The German "Peace Offensive," as it is called, the whole tone of the German Press, and the speeches of the German leaders to the people are all trending towards creating that strongly defensive spirit.

With memories of Prussian methods of repression in Belgium and France behind them, the Saxons and Wurtemburgers and Bavarians will naturally expect retaliatory atrocities on the part of the Allied troops if ever they enter Germany. And one does not hesitate to say that a certain number of the men of any conscript army would be guilty of such atrocities unless restrained by officers who happened to be gentlemen also, for it must be remembered that a conscript army includes the criminals as well as the heroic saints of the population. Knowing this by experience, it is natural that even those Germans who most desire peace to-day should put up the fight of their lives to save their country from invasion.

Reasoning on these lines, it will be seen that those who look forward to an early peace, or a quick and easy victory, if Turkey as well as Bulgaria throw up the sponge, are likely to deceive themselves and others to an extent which may prove extremely dangerous.

The Real Air War.

If and when the Germans are driven back to their own territory, or are forced to retreat to it owing to the defection of their Oriental and Slav Allies, then may come the hardest fighting of the war, and then will certainly come the opportunity of the Allied flying services. The Independent Force, R.A.F., under Sir Hugh Trenchard, is doing in a small way, and doing remarkably well for its size, the kind of work which will be of the greatest influence in finishing the war when the Allied Armies are attacking Germany itself.

While the massed armies are preparing themselves for the final struggle on land, it will be essentially necessary for the Allied aviators to carry the horrors of war into the heart of Germany. The Prussian Junker, who is the driving power behind the decent German States, and the German Jew, who is the financial master of the Junker, have not yet felt the war in their own homes. It will be the pleasing task of the flying services to show them what war means.

One bears the Germans as a whole no ill-will for causing this war. It had to come anyhow, as every man with any historical sense knew fifteen or twenty years ago. And it is well for us that it came when it did, instead of beginning five years later, when Germany's army was ready, when Germany's sea and air fleets were grown to a dangerous size, when an Asquith Government had ruined our defences, and when the efforts of Mr. Lloyd George to set class against class had come to fruition, instead of being nipped in the bud as they were by a healthy enthusiasm for war. In fact, if one could bring oneself to regard the war quite dispassionately, one might even feel grateful to Germany for saving this country from itself and its politicians, for the only alternative to a defeat, if the war had been delayed for a few years, would have been an alliance with Germany, in which Great Britain would have been very much the junior partner, and France would have been the office-boy.

As one has said, our one War Aim is to beat Germany, and, that being done, we can then proceed to differentiate between the decent German nations and the Prussians. It is quite likely that before many years have passed after the war the Saxons and Wurtemburgers and Bavarians will regard us as their best friends for freeing them from the heel of the Prussian boot. Meantime we have to convince them that they need salvation. The best way to convince them is to hit them hard and keep on hitting. And the surest way of hitting their tenderest spots is by air over the heads of their armies.—C. G. G.

ON SOME MORE ABOUT THE WRAF WRANGLE.

The recent article in this paper on the W.R.A.F. wrangle seems to have attracted some considerable attention, judging by verbal and postal communications on the subject. Therefore it seems well to return to the subject again.

In the first place, it is always well to own up to one's own mistakes. It appears that there was a slight inaccuracy in the statement that among the few women who were given commissions from among the many candidates on probation at Roper Hall there were a number of ex-N.C.Os. from the W.A.A.Cs. One is informed that, as a matter of fact, the N.C.Os. in question were women who had been working in the R.A.F., either before the W.R.A.F. was formed, or who had been N.C.Os. in the W.R.A.F. Doubtless they are entirely estimable women in their way, and quite deserve their commissions. But that does not alter the fact that a number of the 137 who were turned down were of superior class—regarded as material from which officers are made—and that many more were at least their equals.

A Matter of Transport.

It also appears that a certain amount of transport besides the single trip of the small motor van mentioned last week was secured for the luggage of the turned-down candidates. This, however, was not due to any consideration on the part of the Officer Commanding at Roper Hall. One is informed that two of the young women who had been turned down, evidently possessing that initiative which is so desirable in officers, managed to get hold of a pig-cart, used by a local agriculturist, and drove it up to Roper Hall themselves.

Into it they put their own baggage and some heavy trunks belonging to some of the other women, and the owners of this baggage were thus enabled to walk to the station without difficulty. The remainder of the unlucky candidates were compelled to transport their own baggage by hand, as related in the previous article. The fact still remains that the authorities at Roper Hall only provided one quite small vehicle for transport purposes.

It certainly does not seem consonant with the dignity of even a rejected probationary officer of either sex in the King's Service that the transport of the said officer's baggage should be committed to the local pig-cart. However, the humour of the navigators of the pig-cart seems a nice set-off against the behaviour of the authorities of Roper Hall, whose lack of common courtesy made it necessary to use such a vehicle. The incident is a minor detail, but it is highly illuminative.

The Selection of Candidates.

The assertion of the Baronne T'Serclaes that selection boards sent the wrong class of probationer seems to be, in the light of later knowledge, something of a reflection on at least one member of the rejection board. It appears that quite a considerable number of the candidates for commissions were actually selected personally by the very officer (feminine) who had the job of communicating to them verbally the news of their being rejected.

The selection certainly seems to have been done in a hurry, for it was evident to the better-class women who were selected that a number of those accepted on probation

were obviously unsuitable. The slatternly down-at-heel aspect of some of the candidates and the over-dressed, peroxide-haired tawdrily fine get-up of one or two others should have been equally a warning to any capable woman of the world that they were not the material of which officers are made. Yet one at least of the officials who selected such women sat on the board which rejected the huge proportion of 137 to 40 candidates. One is informed, in fact, that this particular officer was the chief spokeswoman of the board in each case.

The Process of Rejection.

It is impossible, of course, unless the Wraf authorities vouchsafe an explanation, to state the process by which the final selections and rejections were made, but it seems fairly evident that it was not on the results of examination papers. And it is practically certain that candidates were not rejected on personal grounds, for neither the Administrator at Roper Hall, nor any other officer—except perhaps the doctor—ever got to know any of the women personally, nor, apparently, was any attempt made to study them individually.

Anyone with any experience of selecting officers knows perfectly well that the only sure test is personal acquaintance. Failing that, a technical examination is a moderate second-best method of selection. But, to be at all trustworthy, such an examination should be largely *viva-voce*, so that the examiners may study the personality of the candidate and his or her manners and method of speech. In this case one gathers that the examination, such as it was, took place entirely on paper.

It seems that on one occasion one of the senior officers did attempt to interview each woman separately, but each interview was so short, and she showed so little knowledge of the women herself, that the better-educated women merely regarded the episode as a joke. That being so, the process of rejection becomes still more puzzling.

Muddled Methods.

It also seems certain that no candidates were rejected on the score of being unable to handle subordinates, for no chance was given of proving such ability. Even the drill arrangements seem to have been farcical. There was one unhappy drill-sergeant whose duty it was apparently to teach squad-drill to about 180 women, to teach each individually how to drill a squad of her fellows, and to judge whether each was or was not the material of which an officer was made in this respect. One calculates roughly that it would take four hours' work a day for ten days to make even a reasonable attempt at arriving at a satisfactory result under the circumstances. And one hears that the Roper Hall authorities tried to achieve the same result in about two hours on one afternoon. Naturally the affair was a farce.

The actual business of rejecting the candidates was done by equally muddled methods. The women were confined to barracks for the day, and at an hour which suited the authorities they were all herded into a big room, whence they were summoned, a dozen or so at a time, into another room, whence they appeared one by one before the rejection board, consisting, it seems, of six or seven women and one R.A.F. captain. There they were told that their services were no longer required, and they were then asked whether they had anything to say. Those who had the temerity to ask on what grounds they had been turned down were told in the best feminine-military manner that the authorities were not prepared to answer such a question.

It is alleged that one young woman who had the nerve to tell the board the milder portion of her opinion of the whole business had her pay-cheque stopped, and was obliged, on her return home, to write quite strongly on the matter before she was paid. One cannot vouch for the truth of this story from one's personal knowledge, but if it be true it seems a pretty discreditable affair and to reflect adversely on the officials concerned.

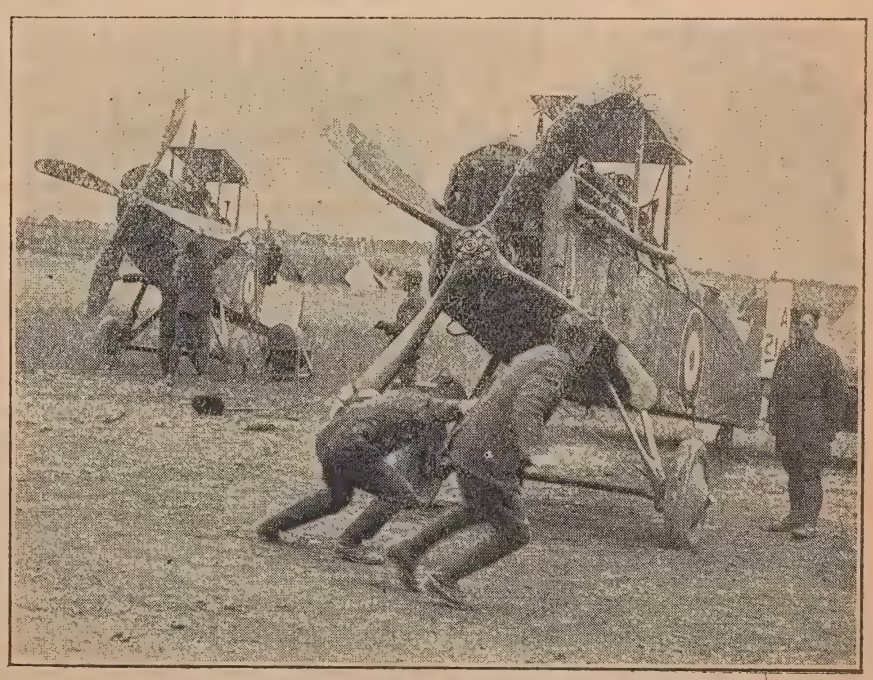
There seems no reason why a civil note should not have been sent to each candidate, telling her that unfortunately her services were not required as an officer. There was no reason whatever, except an apparent desire to humiliate the women, why they should have been hauled up before a board and turned down brusquely in a manner distinctly calculated to hurt their feelings.

The Fair Course.

Altogether the whole W.R.A.F. organisation seems to have been thoroughly messed and muddled. One has no idea who is to blame, and one cares less. But one is more convinced than ever that someone has blundered badly, that a large proportion of the rejected candidates are entitled in common decency to a full explanation of the conduct of the W.R.A.F. administration, and that an inquiry should be held into the whole business.

It is said that Mrs. Gwynne-Vaughan disclaims responsibility for this particular affair, and attributes the whole of it—both the obviously wrong original selections and the equally wrong rejections—to the officials of the previous régime. This seems probably true, for one cannot find that Mrs. Gwynne-Vaughan ever visited Roper Hall while the course of training was in progress, so evidently she had no opportunity of judging the candidates herself. It is also said that the former Administrator-in-Chief knows nothing about it, having been dismissed herself before the affair occurred.

If such be the facts, then it would seem that the only fair course of action for Mrs. Gwynne-Vaughan will be to call



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all the rejected candidates together before a new Selection Board, and to give each of them a chance of re-qualifying, just as if she had never been turned down at all. The names and addresses of the rejected candidates must be in the hands of W.R.A.F. Headquarters, so it would be quite a simple matter to send each a note asking her to appear before this new board.

Not a solitary person on that board should have been associated with the Roper Hall affair, and the members should not even know that they were judging Roper Hall rejects. In fact it would be better to call them up for selection along with an entirely new lot of candidates, so that the board would not know which were new and which were not. Those selected should go through their course of training mixed with the new lot, and only if finally passed for commissions should their former experience at Roper Hall be recalled, and then for the sole purpose of gazetting them with the seniority which they would have held if they had received fair treatment at the first attempt.

Such is the only course open to Mrs. Gwynne-Vaughan if she desires to retain the respect of her subordinates. Either she is responsible for the Roper Hall episode or she is not. If she is responsible for it, then she should dismiss the incompetent officials who caused all the muddle and laid her and her following open to suspicion of playing a political trick, and she should give the rejected candidates a fair chance under competent officials. Also, she should take some interest in their training herself. If she is not responsible for it, then there is the more reason for dismissing the incompetents and starting afresh.

In either case it seems certain that the gross incompetence of these underlings has lost the Wrafs several valuable officers, for, from what one hears, several very capable gentlewomen who were turned down by these Jills-in-Office have been offered responsible work in other departments and are not very likely to avail themselves of Mrs. Gwynne-Vaughan's kind offer whenever she decides to take the only fair course open to her.—C. G. G.

R.A.F. FASHIONS—III.

The latest statement apropos the Bolo Blue uniform is that the Powers That Be in the Directorate of Sartorial Strategy have decreed that if orders can be issued for Gents' Winter Uniformings before the winter is over the newest thing will be a blue precisely twenty shades darker than the present blue. This should bring it out just a little lighter than navy blue. The statement seems to be more than a mere rumour, for it comes from a quarter which has been singularly well informed on sartorial strategy in the past.

The same informant told me of that great war-winning invention the two-prong belt-buckle long before its existence was made known to the mere public, but like a patriotic citizen I kept the secret locked religiously within my breast for fear lest the German High Command should hear of it from some of our Society tattle-tales, and so be enabled to organise another retreat according to plan out of reach of those terrible two prongs.

Incidentally I am told that in the best R.A.F. circles it is considered an unpardonable solecism to fly a machine with either two engines or with twin machine-guns if one is wearing a belt with a single-prong buckle, for the *élite* of the force consider that the single prong matches them as ill from an artistic point of view as do brown boots with a black morning coat, or marching boots with a dinner jacket.

Some young officers are remarkably careless about the uniform regulations. Admittedly it is hard to keep track of the stream of orders issued by the Sartorial Directorate, but officers should remember that the G.O.C. Sartorials is doing his best to win the war, and they should support him in his gallant efforts. If the brain of an officer is incapable of retaining all the orders which are showered upon him, he should arrange to forget something of minor importance, such, for instance, as how to clear a No. 2 jam in a Vickers, or how to use an Aldis, or the difference between "contact" and "off," or such really trivial things, but he must pay attention to the various sartorial orders as issued day by day, otherwise we shall never win the war.

Only the other day, for example, I saw an officer wearing a two-prong buckle with a khaki uniform. Two prongs in khaki! Now, I ask you—!! Only a few minutes later I met another in khaki with the rimless buttons which pertain to Bolo blue. And yet further on another wearing a Sam Browne with a field service jacket, R.F.C. buttons and badges, and a black tie. These things are positively criminal, and it is quite time that the G.O.C. Sartorials withdrew an able-bodied and able-brained officer, of at least the rank of squadron-commander, from active service and appointed him Provost Marshal, R.A.F., for Central London. These things matter less in the suburbs and provinces where proud parents of budding munition profiteers promenade o' Sundays with frock-coats, straw hats, pipes and perambulators, but really they cannot be permitted in the area between the Hotel Bolo and the Berkeley.

Another matter which needs immediate attention is the wearing of chevrons. It is disgraceful that officers and men who have only done four-and-a-bit years of active service should flaunt these decorations in the face of people who have worked earnestly for promotion and pay at home. The person who has a red and four blue chevrons, or a silver and four gold ones, is so puffed up with his own conceit that he does not mind much if he has no multi-coloured ribbons on his left chest, and he quite forgets how awkward he makes it for the home-worker to explain why it is that he has a whole row, or two rows, of chest-ribbons and no chevrons on his sleeve. One feels sure that it is only necessary to point out the injustice thus done to the stay-at-homes, and that hereafter all those entitled to chevrons will cease to wear them. If justice were ever done in this wicked world the G.O.C. Sartorials would even go a step further and order that no R.A.F. officer or man should wear the red-white-and-blue ribbons of the 1914 star, for it must be a constant source of annoyance to those gallant fellows who only joined the Staff of the Bolo after the passing of the Military Service Act.

In spite of all the rude jests which have been made about the Bolo blue, the uniform has its consolations. It does at any rate prevent awkward mistakes. The other day a pretty lady from the country who had never seen the outfit caught sight of an officer in blue with breeches and leggings. She remarked to a friend: "What a funny-looking chauffeur!" and then, her natural good taste coming to her rescue, added:—"No! Of course it can't be. Not even a war profiteer would dress her chauffeur like that. He must be out of a musical comedy and can't find a taxi to take him to his theatre. How sad, poor fellow."

Apropos Sartorial Strategy, a great opportunity is being missed by the G.O.C. He is allowing far too much latitude in the types of collars which are worn. Some officers wear soft white collars held together by a gold or gilt safety pin. Some wear starched double collars. And some wear wing collars. One or other should be made a standard fitting. There seems an opportunity here to add to the elaboration and expense of Bolo blue by ordering that the regulation collar in future shall be of the "wing" type. This should be $2\frac{3}{4}$ inches high (+ or — .001 in.), the wing-flap or aileron to measure $2\frac{3}{4} \times 2\frac{3}{4}$ (+ or — .001 in. as before) for the two sides of the right angle forming the point on each side. I regret that I have no time in which to work out the lengthy of the hypotenuse, but this task may provide at least a week's work for the Design Department.

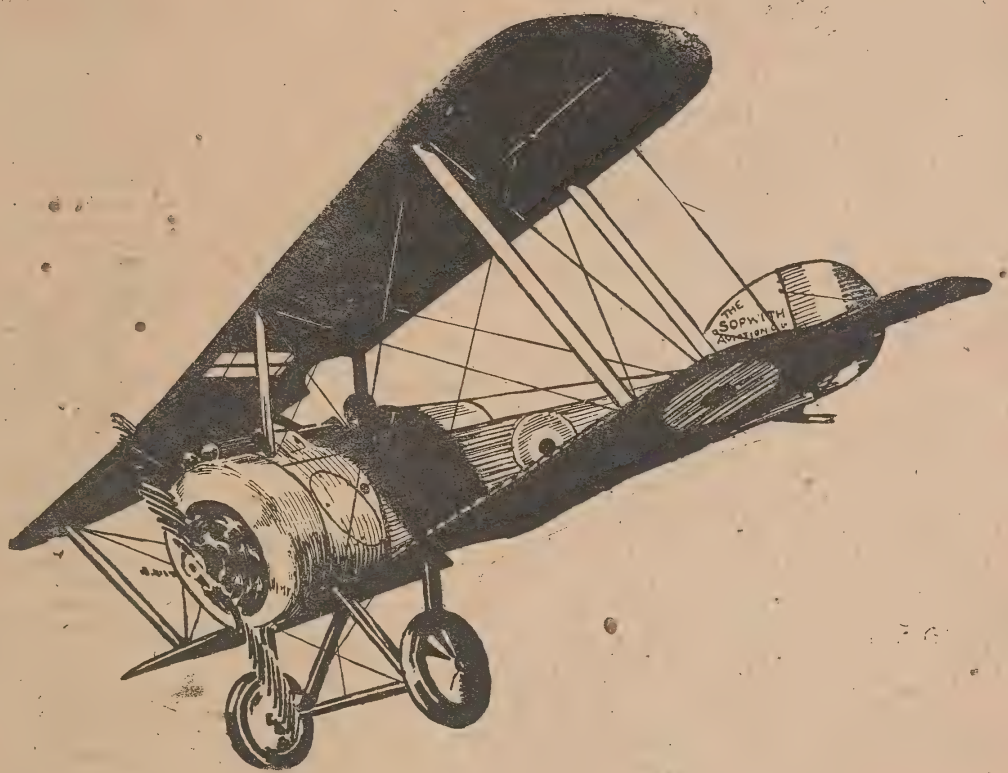
On the space thus provided the orthodox R.A.F. initials should be worked in Bolo blue silk. The effect would be what the *coutourier* calls "exclusive," and the cost would not be less than 10s. 6d. per collar. No collar thus decorated would stand washing more than twice, and as no collar could be worn more than once without washing, the innovation would cost the R.A.F. officer a trifle over a guinea a week for the duration of the war. Surely this alone should be sufficient inducement to the Sartorial Directorate to adopt the suggestion forthwith.

A correspondent, who I believe is a Scot, describes the Bolo blue as "a uniform the colours of which are rideeclous; the conspicuousness of which is exceedingly great; the beauties of which endure but a shorrt while; and the cost of which, I am creedibly informed, is practically proheebitive." The quotation seems to have a familiar aspect and sounds as if it were a warning from a pulpit. Anyhow it it not a bad description.

Apropos which I am told of an officer who appeared at an important function in R.A.F. khaki, and was duly hauled over the coals. His explanation was:—"Well! you see, I've been wearing my blue uniform in the sun a bit, and it is now three distinct colours. And I didn't know which was regulation shade." Unless it is desired that the R.A.F. should present the appearance of Laban's flocks and herds after Jacob had carried out his experiments in eugenics on them, it seems desirable that something should be done about the colour-scheme of the R.A.F. uniform for regular wear on duty. Meantime I commend to the owners of Bolo blue that they should reserve it for evening wear. Now that Sir Francis Lloyd has permitted his retirement to be celebrated by dancing in public places, it seems that the proper sphere of influence of Bolo blue has been discovered.—

C.G.G.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

ST. MICHAEL'S GUILD FOR AVIATORS.

Cardinal Bourne, Cardinal-Archbishop of Westminster, preached on Sept. 29th at the Church of St. Michael, Ashford, Middlesex, on the inauguration of the Guild of St. Michael for Aviators.

He said that it was fitting that this new and potent weapon, and those who wielded it, should be placed under the special patronage of one who stood near to the throne of God, the great archangel St. Michael. There was ever before us the thought of that tremendous conflict which took place once in the heavens—St. Michael and his angels doing battle with the dragons, with Lucifer and his angels, the fight between the powers of Good and Evil.

To-day we witnessed a war of principle, not a war of conquest, not a war so much for dominion, not a war for dynasty, but a war between two contending sets of principles, and we believed in our consciences that in the main we and those who are fighting with us were doing battle for principles that were right and true according to the mind of God Himself.

Now that the conflict was, as we had reason to believe, gradually but surely nearing its end, nothing was more important than that we should raise up our thoughts to Almighty God and beg Him earnestly and constantly that in the making of peace all might be ordered according to His holy will. Then we should remember that there was an obligation upon every man, woman, and child, and, above all, upon our fighting men, so to live that there may be nothing in our lives to render us unworthy of the victory for which we all prayed.

Of all our fighting men, there was none who needed physical strength and fitness in its most perfect form more than those who fought in the air. The perfection of health, the perfection of strength, the fullness of skill, the keenness of power, all depended upon the perfection of moral integrity. Any deviation from the law of perfect sobriety and purity lessened to some extent the usefulness of those who had to wage this tremendous battle.

[The report above is taken, with due acknowledgments, from the "Times" newspaper.—Ed.]

* * * *

The following letter is both amusing and of really serious interest to Catholic aviators.

Dear Sir,—Thank you for giving such prominence in a recent issue to the "Guild of St. Michael for Aviators." It was first-class. You say that thousands of Catholic aviators read THE AEROPLANE. I can quite believe it; first, because if they don't, they ought; and, secondly, because in the week or so following your article, I was inundated with letters beginning with the phrase "having seen in the current AEROPLANE."

By the way, you will see that we have adopted your suggestion re substituting "Aviators" for "Airmen." Though no misunderstanding has yet arisen through the use of the word "airmen"—for the number of officer aviators in the Guild is legion—yet misunderstanding might arise in the future. We want *all* Catholic aviators in the Guild, whether officers or not.

That reminds me. The word "aeroplane is going to be dropped some day, and "volor" used instead. Please excuse the hint!

If you are not too angry with me for this rude remark, just let me suggest to the remaining millions of your Catholic readers that they might accept the Cardinal's invitation, and send their names to me for membership in the Guild (if aviators), or Associateship (if not aviators). The members put themselves under the special protection of "Mighty Michael," Patron of Aviators; and the associates share in the great league of prayer for the members. Medals, differing for the two classes, are sent to all; and they are at liberty to send a small offering to cover expenses—as this is not a charity concern! Members are delighted with the weekly Mass which is said for them every Monday (St. Michael's day) in the parish of St. Michael's, Ashford.

With that gratitude which is not only a delicate sense of favours to come, I am, yours gratefully,

(Signed) A. N. MORGAN.

St. Michael's Presbytery, Ashford, Middlesex.
Feast of St. Michael.

[One heartily endorses Father Morgan's effort to enroll all Catholic aviators under the banner of St. Michael, and if any Catholic readers of this paper are not already in communication with him, one hopes they will write to him forthwith. One disagrees with His Reverence on one point only, namely, the word "volor." The user of a "volor" might be called a "voleur," an epithet which, though possibly appropriate to many aviators, would hardly be complimentary to all.—C. G. G.]

ANOTHER R.A.F. APPOINTMENT.

Lieut.-Colonel H. C. Mayes, Director of the Canadian Army Gymnastic Staff, has been appointed adviser to the Air Ministry on the physical and athletic training of the Royal Air Force. Colonel Mayes is the author of a manual on bayonet fighting, which has been issued under the authority of the War Office.

A POSTHUMOUS HONOUR.

At Kingston Barracks on Sept. 24th, Mrs. McCudden received the Military Cross awarded to her son, Sec. Lt. J. A. McCudden, M.C., R.F.C. It is stated that Mr. McCudden had 11 enemy machines to his credit.

HONOUR WHERE DUE.

Mr. Bonar Law, speaking at a meeting at the Guildhall held to inaugurate the campaign on behalf of the New Issue of National War Bonds, said:—

At a meeting in the Albert Hall, where the Prime Minister and I were present, we spoke of these War Loans. It was just after the raid on London, and I said then that we would never have started the bombing of defenceless towns—(hear, hear)—but I said also, "Our enemy has chosen to do it. Let him have a little patience, and we will give him back in full measure all that he has given to us." (Cheers.) That promise has been kept. (Laughter.) This war, unfortunately, is a war not only of armies; it is a war of peoples. I am sure the people of this country have not realised the effect which the action of the Independent Air Force has had upon the *moral* of the German people. (Cheers.) I shall say nothing more on that head, except this, that that weapon is not ended. (Hear, hear.)

[And this force is commanded by that great general whom Mr. George was quite ready to "scrap" in order to save the face of his political or financial friend Lord Rothermere.—Ed.]

THE U.S. ARMY AIR SERVICE.

Reuter's correspondent with the American Army in France writes on Sept. 29th:—

The outstanding achievement of the American Army in its latest offensive stands undoubtedly to the credit of its aviators. They have done all and much more than was expected of them. Their commander, Colonel Mitchell, claims proudly that there is nothing to beat them in the world, and it will certainly be long before their Saturday's record is surpassed—sixty machines crashed and twelve balloons burnt without a single casualty. On that wonderful day the distance covered by the planes of a single wing amounted to 44,510 miles, or twice the girdle of the world, in the course of which they fought fifty combats and destroyed nineteen of the enemy's planes without loss to themselves. In another combat on the same day a patrol met ten of the enemy's planes between Charpentry and Ivoiry, sent one down in flames, crashed five, and drove the two remaining down out of control. Another patrol, diving through a hole in the clouds to drop their bombs, came suddenly upon seven Fokkers, which were almost immediately joined by seven more. Joyously the patrol at once got rid of its bombs and joined issue, and during a twenty minutes mix-up, which took them all the way from Sommerance to Liny, seven of the enemy's planes were destroyed and the remainder scattered in all directions.

And, in addition to these successes, on that one day the German balloons were literally swept out of the sky.

A QUEER CASE.

A Frenchwoman, named Mathilde Carmen Taylor, 26, whose husband is a British soldier now in France, was charged at Wallasey, on September 30th, with having had in her possession photographs, plans, and designs in book-form likely to be useful to the enemy.

The book was taken to the police station by the persons with whom the defendant was lodging, and she herself went to the police to complain that it had been stolen from her. When asked to account for her possession of it, she said she had been working on munitions at Coventry, and while there she became friendly with a British officer, a captain in the Air Force, whom she told she wished to go in for aeroplane work. He lent her the book, which was issued by the Technical Department of the Air Ministry, and told her that if he did not see her again she was to destroy it and not let anyone see it.

The Chief Constable said it would be necessary to bring the officer from France to state whether the defendant's story was correct or otherwise. The defendant was therefore remanded for a week in custody.

THE DEFENCES OF THE RHINE TOWNS.

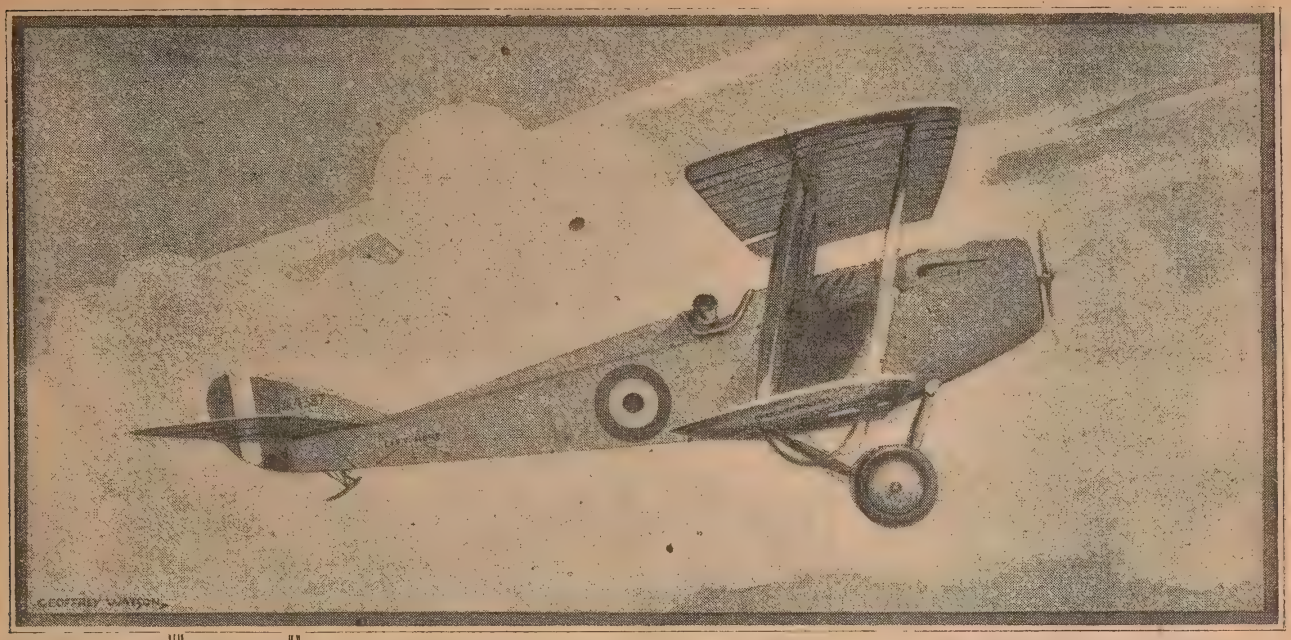
Mr. H. Patrick Devitte, the "Daily Express" correspondent at Geneva, writes on Sept. 26th:—

The military commandant of Mannheim has issued the following proclamation:—

"The population of the town is warned that an aerial barrage has been established round Mannheim and Ludwigshafen.

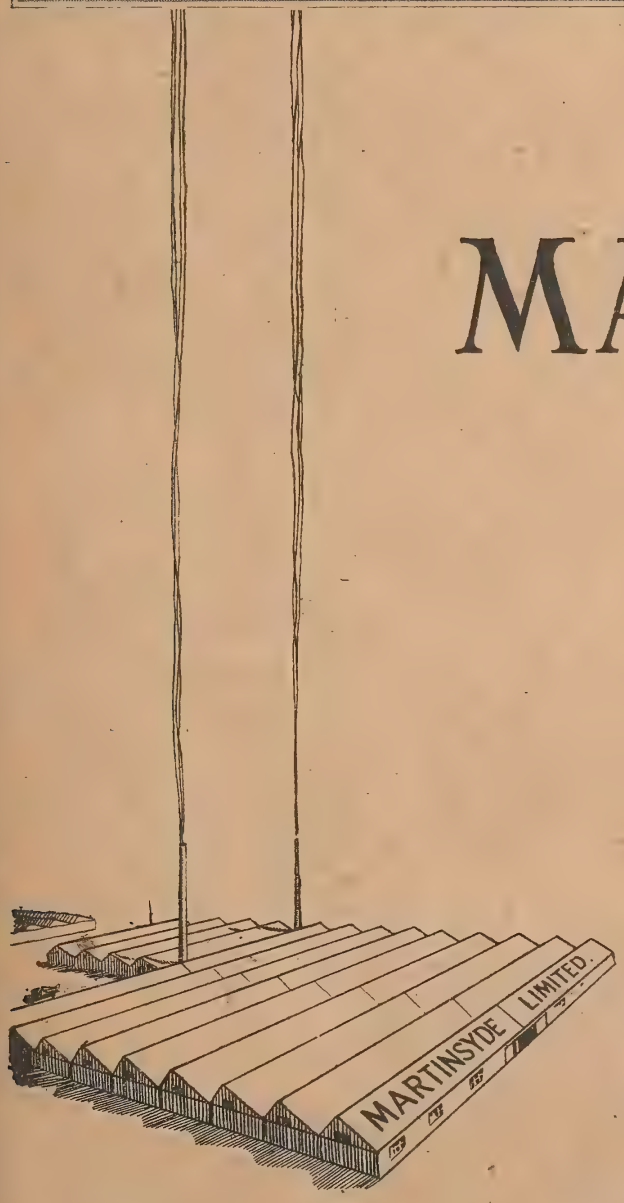
"It is strictly prohibited that any person should penetrate into the barrage or touch the cables of the captive balloons. They are warned that the wire fences surrounding the barrage zone are charged with a strong electric current, and that to touch the wires means death."

So far from reassuring the people, the effect of this order is declared to have been to create greater alarm than ever.





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LAST WEEK'S AIR WAR.

During the past week, British aviators have undertaken important offensive operations in no fewer than six separate sectors or theatres of war. Of these, three have been directed against Germany, two against the Turks, and one against Bulgaria.

The following list shows the six points from the Coast of Flanders to Palestine:—

1.—Northern Coastal Sector.—Destructive air raids upon German submarine, naval and aircraft stations in Belgium.

2.—Battle Front in France.—Intense air-fighting between La Bassée and the Peronne-St. Quentin road.

3.—Rhine Front.—Sixteen heavy bombing raids by R.A.F. Independent Force into Germany.

4.—Salonika Front.—Much low-height bombing and machine-gun fighting from the air on the roads to Strumnitza.

5.—Ægean Front.—Double raid upon Constantinople causing damage to station and military buildings at Nagara and Stamboul.

6.—Palestine Front.—Great British aerial activity, resulting in much destruction of enemy transport, stores and war material, and heavy casualties to the retreating enemy.

While the full effects of this concentric assault cannot immediately be realised, two points at least, which make the week's air-fighting of unusual interest, stand out clearly. The first is the increasingly important part played by aerial reconnaissance in preparing the way for a successful offensive. The second is the very striking power of modern aircraft to intensify the disorder and chaos in the rear of a defeated army.

Air Work in Palestine.

Both these points are well illustrated by the recent dramatic events in Palestine. For some time past, contingents of the Royal Air Force and the Australian Flying Corps have been carrying out reconnaissance upon a wide scale over the maritime plain stretching from Mount Carmel in the north to the Shechem-Joppa road, as well as over Samaria and the valley of the Jordan, from the edge of the Judean plateau to the Sea of Galilee. Excellent aerial photographs were taken, which proved of very great value to the British staff during the subsequent advance.

Other aerial contingents, crossing the eastern range of hills, attacked vigorously the enemy centres at Amman and Deraa, on the Hedjaz railway, which runs from Medina through Damascus to the Turco-German base at Aleppo.

All these operations were preliminary to the offensive which achieved such striking success at the end of last week. Acting in close co-operation with the plans of the Infantry and Cavalry units, British aviators, on the night of the 18th inst., heavily bombed the vital enemy railway junction at El Afuleh, in the Plain of Eschaelon (Askalon), south of Nazareth, thus hindering the despatch of reinforcements from the north, and adding enormously to the difficulties of the enemy.

Nablus, the stragetic centre of Samaria, was heavily attacked by air from the commencement of the offensive; and on Sept. 21st and 22nd, as the Turkish retreat developed into a rout, British aviators inflicted very heavy casualties and enormous material damage upon the enemy in the congested mountain roads, notably on those leading to the famous Damieh Ford across the Jordan, along which the main enemy columns unsuccessfully attempted to escape.

The Bulgarian Defeat.

On the Salonika front, as in Palestine, a large number of reconnaissance and bombing raids were carried out prior to the opening of the offensive on Sept. 18th.

On the morning of the 21st inst. British aeroplanes brought advice of the impending retirement of the enemy, extensive fires being observed at Hudova Station and other significant positions behind the lines, while later in the day the Kosturino-Sturza road was seen to be densely packed with troops and transport hurrying to the rear. Squadrons of British aviators continuously attacked these from a low height, causing much material destruction.

In the course of a single air-fight between four British machines and fourteen of the enemy, two hostile machines were destroyed. One British machine failed to return.

The West Front.

In France, the heaviest air fighting took place north of the Arras-Cambrai road. Large enemy air forces were thrown into the battle, and much bitter fighting resulted particularly between Cambrai and Orchies, a small town to the north-east of Douai.

On this front alone, in addition to dropping nearly 140 tons of bombs, British aviators destroyed 91 enemy machines, drove down 35 out of control, and shot down 8 kite-balloons in flames. Forty British machines were reported missing.

On the Rhine front, the R.A.F. Independent Force has again dropped an exceptionally heavy weight of bombs upon enemy railway and industrial centres in the course of 16 successful raids into German territory. In all, nearly 50 tons of bombs were dropped during the week upon the railways at Frankfort, Kaiserslautern, and Metz-Sablon, the blast furnaces at Hagendingen and Rombach, the Lanz Works at Mannheim, factories at Durbach and Karlsruhe, and the hostile aerodromes at Boulay, Frescaty, and Morhange.

British aviators have further been active in Italy, where much valuable reconnaissance work has been carried out, in the course of which six enemy machines were destroyed and three driven down out of control. In this theatre all the British machines engaged returned safely.

THE AVIATION POCKET-BOOK.

The nights used to pass calmly, except for the occasional flop of a snake dropping from the reed roof on to the mosquito netting overhead, the sound of a rat furiously nibbling your fountain pen, or a cake of soap, the eternal "cheep-cheep" of the crickets in the marshes of the Sabii river, and the shrill yap of the jackal. Barring these incidentals, and the long-drawn-out, heart-chilling howl of the hyæna, or the occasional panting roar of a lion, the nights, as I say, were without incident!

At the grey hour of four in the morning a gnawing, persistent noise would blend with my dreams of London. "N'Koos" it would mutter respectfully, over and over again. "N'Koos. N'KOOS! Bread and butter, him ready."

The conch horn would wail in the mists outside for the boys to get to work while I scoffed my tinned butter on bread, and drank a cup of stewing tea hastily with a quinine tabloid. I would grab my sjambok from a nail and slip on a felt hat (pith helmets were not needed till later in the day), indicating to Sixpence the over-night rat in the trap.

That worthy would then pour boiling water over the rat, slowly and voluptuously, while I went out shivering in thin khaki drill into the reeking mists, full of nightmare silhouettes of towering ant-hills, swaying palms, and all the opium dream shapes that fill tropical Africa in the hours of darkness.

I would go to the native compound, stumbling over sleeping piccannins, Kaffir cooking pots, and the like. Out of the swirling mist emerges my head boy, M'Foota, grinning happily, as ever. "Good for pick him M'Harvi patch to-day, N'Koos!" I nod, and three hundred of us file down the winding native path, hemmed with clawing thorns, the foliage weighed down with moisture. The gang strings out across the great furrowed field, and begins to pick somnolently.

In the Field of the Well, to my right, I can hear the expatriated Cockney, Marsh, admonishing his charges: "'Igher up there! 'Igher up!" after the manner of the busmen in a far-away place called England, where life goes on just the same without us. I wish Africa and all her works at the devil, and dream of the roaring traffic in the Strand. . . .

But that was all ten years or more ago, when aeroplanes meant little or nothing to me. Now they come and eat out of my hand. And because of this the Editor has sent me Mr. Borlase Matthews' "Aviation Pocket-Book for 1918" (Crosby, Lockwood and Son, 6s.). You probably know the book already: it is a kind of aeronautical "Kent," and an ever-present help in trouble. The matter has been brought up to date, and now includes chapters on Air Pressure and Resistance, Aeroplane Design, Materials for Aeroplane Construction, Airscrews, Engines, Typical Aeroplanes, Aeroplane Alignment and Rigging, Piloting and Aerial Navigation, Meteorological Data, Scouting and Signalling, Aero Clubs and Societies, a useful bibliography, glossary of terms, conversion tables, and index, and squared leaves on which to plot curves.

The bald headings, as given above, in no way indicate the scope of the book, nor the technical adequacy of its data. Within a compass of some 350 pages has been compressed a wealth of matter which is truly surprising—or would be, rather, to the few who are not already acquainted with this annual. The treatment is always adequate, and of a character to commend itself particularly to practical men who wish for a portable compendium to which they can turn for information on almost any head, being assured in advance of finding it clearly and thoroughly expounded.

No matter whether you are in doubt as to the weight and volume of water at different temperatures, or the chord and gap of devils unawares such as the Gotha, you may be confident that it is presented here, and in such form that nothing will be left unillumined. Though perhaps there are technical slips here and there, to err is human, and even Homer nods, therefore why should not Mr. Matthews be permitted an occasional error?

The engineer, and his embryo the student, alike will find that this is a handbook which they cannot afford to be without, and I have no option but to apply to it that much-abused word, "Indispensable." The same applies to the pilot, for the chapter on wind and weather is particularly good, to say nothing of a wealth of collated information regarding the ailments of aeroplanes.

Both in matter and exposition this book is sound, and constitutes in itself the best of recommendations.—R. H. B.

KAMERAD CORNER.

A week or so ago the readers of this paper were asked to find a good name for the latest Hotel Bolo annexe, namely the extension of the Air Ministry offices in Adelphi Terrace. A reader, whose identity one dare not disclose for fear of possible reprisals, but whose initials are H.P.V., suggests "Kamerad Corner" as a useful name. One fancies it would be hard to beat it.


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NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Sept. 10th.

His Majesty the King has been graciously pleased to confer the undermentioned rewards on Officers of the Royal Air Force, in recognition of gallantry in flying operations against the enemy:—

AWARDED THE DISTINGUISHED FLYING CROSS.

Lt. RICHARD GEORGE SHAW (Sea Patrol).

In company with another machine he recently attacked seven enemy seaplanes and destroyed one of them. Lt. Shaw has shown exceptional ability as a flight leader. He has carried out successfully 21 bombing raids, 51 anti-submarine patrols, and has descended to very low altitudes to attack hostile submarines, destroyers, and trawlers, scoring at least two direct hits. This officer displays great determination and keenness in his work.

Lt. (Temp. Capt.) BENJAMIN JAMES SILLY, M.C.

For exceptional skill and gallantry on long-distance raids, in 47 of which he has been engaged, and has been the leader on 22 occasions. Within the past month he led a formation of bombers which accomplished their object notwithstanding that the enemy scouts were encountered almost from the start, and at the destination they numbered 40 machines. Capt. Silly's formation destroyed four enemy aircraft, and returned without losing a single machine.

Lt. FRANK WOOLLEY SMITH (Notts. and Derby. R., T.F.).

This officer has carried out most valuable work in observing for our artillery from kite balloons. On one occasion his balloon was brought down in flames; his parachute did not open properly, and he fell very rapidly; fortunately, a tree broke his fall and saved him from what seemed certain death. Although badly shaken, he volunteered at once to ascend in another balloon. On a later date, when engaged in registration for one of our batteries, his balloon was burnt; after parachuting down, he at once ascended in another balloon and completed his task. The courage and coolness shown by him under these circumstances deserves the highest praise.

Lt. (Temp. Capt.) WILLIAM ERNEST STATON, M.C.

This officer has already been awarded the Military Cross for gallantry and devotion to duty. Since this award he has accounted for 11 enemy aeroplanes—nine destroyed and two shot down out of control. He has proved himself a most efficient flight commander and an enterprising leader, setting a very fine example to his squadron.

Lt. WILLIAM SAMUEL STEPHENSON, M.C.

This officer has shown conspicuous gallantry and skill in attacking enemy troops and transports from low altitudes, causing heavy casualties. His reports, also, have contained valuable and accurate information. He has further proved himself a keen antagonist in the air, having, during recent operations, accounted for six enemy aeroplanes.

Lt. EARLE RICHARD STEWART.

For gallantry and skill as an observer on long-distance bombing raids. During a raid a few months back he was in the deputy-leader's machine (which usually has to bear the brunt of an attack), and in the course of repelling vigorous enemy attacks he had a breakage in his gun, with the result that he could only fire single shots. In these circumstances he would have been justified in causing his pilot to close up under the remainder of the formation, but with great coolness and sound judgment he maintained his place, and thus avoided the risk of impairing the squadron's defensive efficiency. By his action he rendered the most valuable assistance to his formation in holding off the enemy, and by the time the enemy had been dispersed he had fired 200 rounds by single shots with excellent effect. Lt. Stewart has rendered further distinguished services during the past month, displaying very great ability and absolute fearlessness.

Lt. HAROLD WALLER ST. JOHN (Sea Patrol)

An intrepid and skilful observer who has rendered most efficient service on reconnaissance and long-distance bombing raids. He bombed and destroyed an enemy flying-boat on one raid, and on another occasion sunk a torpedo-boat.

Lt. (Temp. Capt.) THEODORE QUINTUS STUDD (Sea Patrol).

As pilot he has been engaged in more than 60 successful bombing raids many miles behind the enemy's lines. Capt. Studd is a most skilful pilot who can always be relied upon to carry out any task that he may be called upon to perform, no matter what adverse conditions may prevail.

Lt. GEORGE THOMSON (King's Own Scottish Borderers).

A brilliant and intrepid observer in whom his pilot places implicit confidence when engaged in action. He has personally accounted for nine enemy machines. On one raid, when acting as escort, 15 enemy aeroplanes were encountered; of these this officer shot down two, which crashed, and one out of control.

Lt. ERNEST HENRY TREDCROFT.

A cool and courageous observer with marked initiative. He has taken part in 41 successful bomb raids and seven photographic reconnaissances. On one raid, having dropped his bombs on a bridge, he attacked and dispersed with gun fire a number of the enemy on the bank of the river although he had received two severe wounds. On the return journey his machine was attacked by five enemy aeroplanes; with great gallantry he drove them off by his fire. He became exhausted by the exertion and severity of his wounds, which caused him to collapse in the machine.

Lt. WILLIAM BERESFORD WALKER (H.L. Inf.).

This officer has taken part in twenty-one bomb raids, and has rendered excellent and valuable service in photography and general observation. He has shown himself a brave and skilful officer in action, notably on one occasion when his formation was attacked by twelve hostile scouts which approached to within short range; he engaged one at 150 yards and drove it down in flames. In another engagement he attacked one enemy aeroplane at close range and drove it down; he then engaged several others with good effect.

Capt. RICHARD PERCYVALE WARD, M.C. (R. Welsh Fus.).

Has been engaged on thirty-seven bombing raids, and on ten photographic reconnaissances, and has been in nearly all the raids in which severe fighting has taken place. Captain Ward has displayed the greatest coolness and courage in action, combined with ability and keenness in the work entrusted to him.

Lt. (temp. Capt.) LESLIE REGINALD WARREN (late R.N.A.S.).

This officer has taken part in forty-six successful raids, fourteen of which he has led. In these operations his formation has only suffered one casualty. This remarkable immunity has been in the main due to his brilliant and skilful leadership; he combines keenness and determination with sound, clear judgment. In addition to raids, he has taken many area photographs, and carried out five long-distance reconnaissances, rendering valuable reports.

Lt. (temp Capt.) ERIC WATERLOW, M.C.

This officer has carried out thirty-three bombing raids and over forty solo photographic and long-distance reconnaissances far over the enemy lines. In one flight he took no less than 108 photographs. In these services he has proved himself an exceptionally skilful and resolute pilot; his railway reconnaissances have been markedly successful.

Lt. DONALD JAYNE WATEROUS.

Has been engaged in twenty-six long-distance bombing raids, and has rendered very valuable services, especially during a raid last month when enemy formations were met in great force. Lt. Waterous displays great keenness and determination in his work, and is always ready to volunteer for any difficult task.

Lt. (temp. Capt.) ERIC JOHN WEBSTER (Sea Patrol).

Has carried out several long-distance reconnaissances and engaged enemy aircraft who were in superior numbers on many occasions. A few months ago he was engaged in a fight, and on the return journey home he had three forced landings. When he reached his base one engine had practically stopped.

Lt. PATRICK ELIOT WELCHMAN (K.O.S.B.).

A gallant, capable and determined leader of long-distance bombing raids. Within the past month he has rendered as deputy-leader very valuable services by resolute co-operation with his leader, and the success attained was in no small degree attributable to the presence of mind and grasp of the situation which this officer displayed. Lt. Welchman has taken part in eighteen bombing raids, showing marked ability on all occasions.

Lt. GEORGE HEDLEY WELSH.

During the last three and a half months this officer has taken part in seventy-nine bombing raids. Many of these have been carried out by night, and he has displayed conspicuous bravery in descending to low altitudes to successfully attack his objective. One night he carried out four such attacks, exploding a dump and harassing troops on the ground.

Lt. (temp. Capt.) FREDERICK WILLIAMS, M.C.

Since this officer was awarded the Military Cross for exceptional leadership of a long-distance bombing raid, he has taken part in twenty-seven successful operations over the lines, ten of which have been photographic reconnaissances. The information he has brought back has been of the greatest value. He is an excellent leader, and a most able instructor. Recently he led a formation to attack an important enemy town. Owing to thick mists and low clouds he was unable to locate his objective. Turning, he succeeded in locating another town, which he bombed with excellent effect, despite heavy hostile anti-aircraft fire.

Lt. NORMAN EDMUNDSON WILLIAMS (Sea Patrol).

Was engaged in a long-distance bombing raid on an enemy aircraft station under very difficult circumstances, and carried out a successful attack from a low height in the face of severe enemy fire.

Lt. (temp. Capt.) CLARENCE EDWARD WILLIAMSON-JONES (Manchester Regt.).

This officer has completed 50 successful G.B. shoots, frequently under adverse weather conditions, and in face of severe opposition from aeroplanes and anti-aircraft fire. The success of these operations was in many cases mainly due to his courage and perseverance. On one occasion, flying at 2,000 feet, he held up for a time the advance of hostile infantry.

Sec. Lt. (Hon. Capt.) HUGH BRIAN WILSON (A.S.C.).

This officer has taken part in fourteen long-distance night bomb raids; by descending to low altitudes and directing his machine well over the objective he drops his bombs with great accuracy. On two recent important raids it was entirely due to his skilful observation and resolute determination that the objective was successfully reached and effectively bombed despite unfavourable weather and heavy anti-aircraft fire.

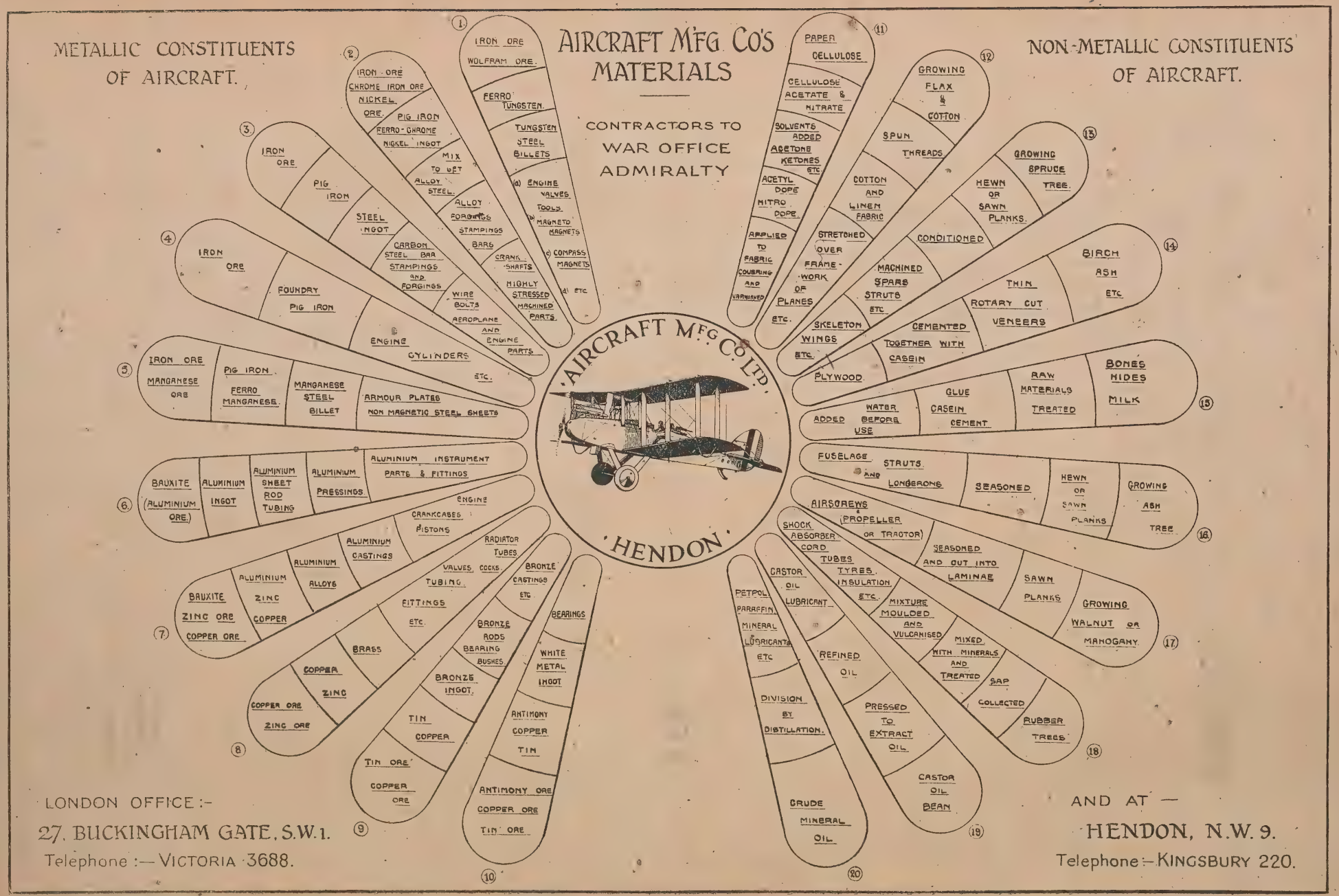
Lt. JOSEPH CHARLES WILSON.

While on a photographic reconnaissance the rudder controls of this officer's machine were shot away. Shortly afterwards he was attacked by three enemy scouts; he handled his damaged machine so skilfully that his observer was enabled to shoot down one out

(*Continued on page 1237.*)

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A REPORT ON THE FOKKER SINGLE-SEATER BIPLANE TYPE D.7.

The following report on the Fokker Biplane is reproduced by kind permission of the Technical Department of the Ministry of Munitions, to whom the Editor desires to express his thanks.

The British No. of the machine is B/2B/14, and the German No. is Type D7 F.N. 1,450; maker's No. 2,455.

It was brought down north of Hazebrouck on June 6th, 1918, by a British S.E.5a, and is a single-seater fighter.

The principal dimensions are as follows:—

Span	29 ft. 3½ ins.
Chord (upper wing)	5 ,, 2½ ,,
Chord (lower wing)	3 ,, 11¼ ,,
Overall length	22 ,, 11½ ,,
Gap	4 ,, 2 ,,
Area of Upper Wings (with ailerons)	140.7 sq. ft.
,, ,, Lower Wings	78.3 ,, ,,
,, ,, Aileron (one only)	5.7 ,, ,,
,, ,, Balance of Aileron	.5 ,, ,,
,, ,, Horizontal Tail Plane	21.1 ,, ,,
,, ,, Elevators	15.2 ,, ,,
,, ,, Balance of Elevator	1.1 ,, ,,
,, ,, Fin	2.8 ,, ,,
,, ,, Rudder	5.9 ,, ,,
,, ,, Horizontal Area of Body	35.6 ,, ,,
,, ,, Vertical Area of Body	58.6 ,, ,,
,, ,, Plane between Wheels	12.4 ,, ,,

This aeroplane presents features of very great interest, whether viewed from the standpoint of aerodynamic design or of actual construction. The machine which has been the subject of investigation was, unfortunately, rather extensively damaged, thus making absolute accuracy of description difficult, and trials of performance impossible.

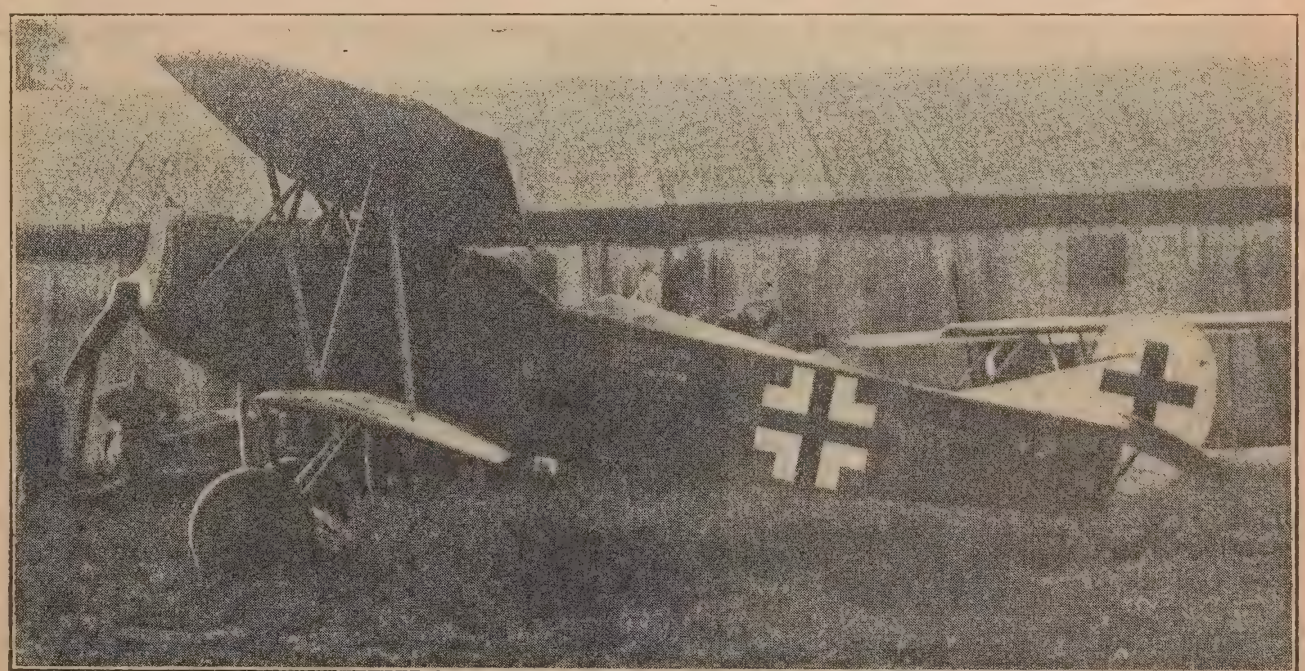
A similar machine, however, has been tested for performance by the French authorities, who have issued the following report:

Altitudes.	Time of climb.	Speed at this height.
1000 metres (3281 ft.)	4 mins 15 secs.	116.6 m.p.h.
2000 ,, (6562 ,,)	8 ,, 18 ,,	114.1 ,,
3000 ,, (9843 ,,)	13 ,, 49 ,,	109.7 ,,
4000 ,, (13124 ,,)	22 ,, 48 ,,	103.5 ,,
5000 ,, (16405 ,,)	38 ,, 5 ,,	94.9 ,,

There are many points in which there is distinct divergence from accepted German, and tendency towards British, practice. The undercarriage, position of radiator, and aileron control levers, or kingposts, are examples.

This fact is some indication that the designer of this machine has approached the various problems and compromises which confront one who sets out to create such a machine, with a quite open mind, and, if this be allowed, there is a very strong case for a thorough investigation of those features which are in contradiction to contemporary British practice. These points include the wing design, which is without any external bracing, but of especially deep section; the steel-tubular fuselage, and the peculiar bracing of this member.

There is nothing to prevent the adoption of the first and last features; but it should be pointed out with regard to the steel work that experienced welders have expressed the opinion that this art has been developed by the enemy to a high degree of efficiency. Indeed, the welding is sufficiently good to give rise to the belief that new methods, involving radical changes, have been adopted.



A Side View of the Fokker Biplane, showing the curious strut arrangement.

* The following data regarding weights is taken from a French source :—

Weight of fuselage, complete with engine, etc.	1,322.2	lbs.
,, ,, upper wing with ailerons	167.2	,,
,, ,, lower wing	99.0	,,
,, ,, fin and rudder	6.6	,,
,, ,, fixed tail plane	17.6	,,
,, ,, elevators	9.9	,,
	1,622.5	lbs.

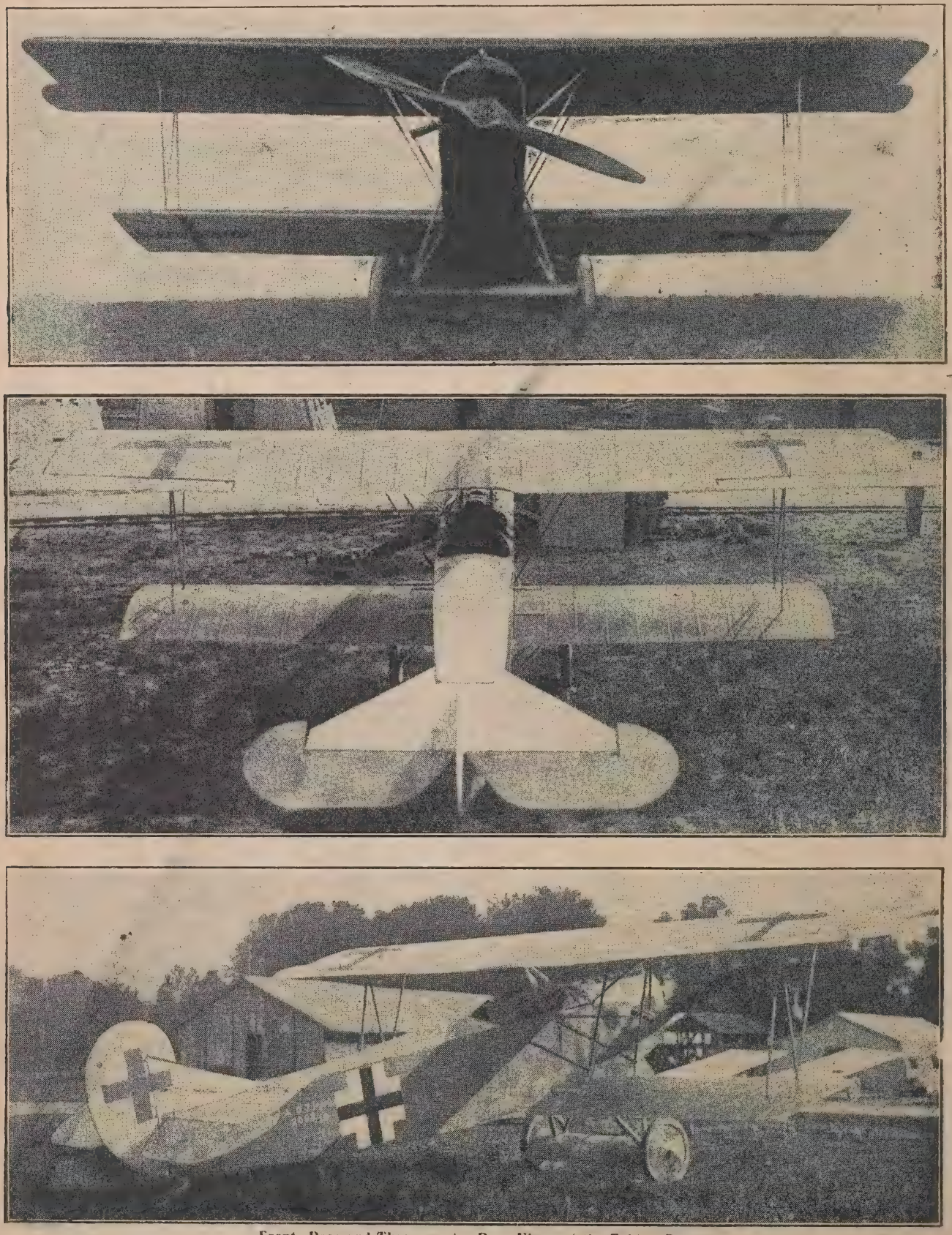
* The schedule of principal weights given on page 1204 is the result of weighing the actual components mentioned, which were taken from the aeroplane allotted G/2B/14.

A different French report gives the following figures, which are taken from inscriptions found on one of the Spandau guns on a captured Fokker of the same type :—

Weight, empty	1,540	lbs.
Permissible load (useful load and fuel)	396	lbs.

Wings.

As in the Fokker triplane, the extreme depth of wing section and the absence of external bracing are distinctive features. Both upper and lower wings are without dihedral, and are in one piece. The way in which the lower wings are fitted into their place is described in detail under the heading "Fuselage." Both upper and lower chords are set parallel to the crankshaft, i.e., at no

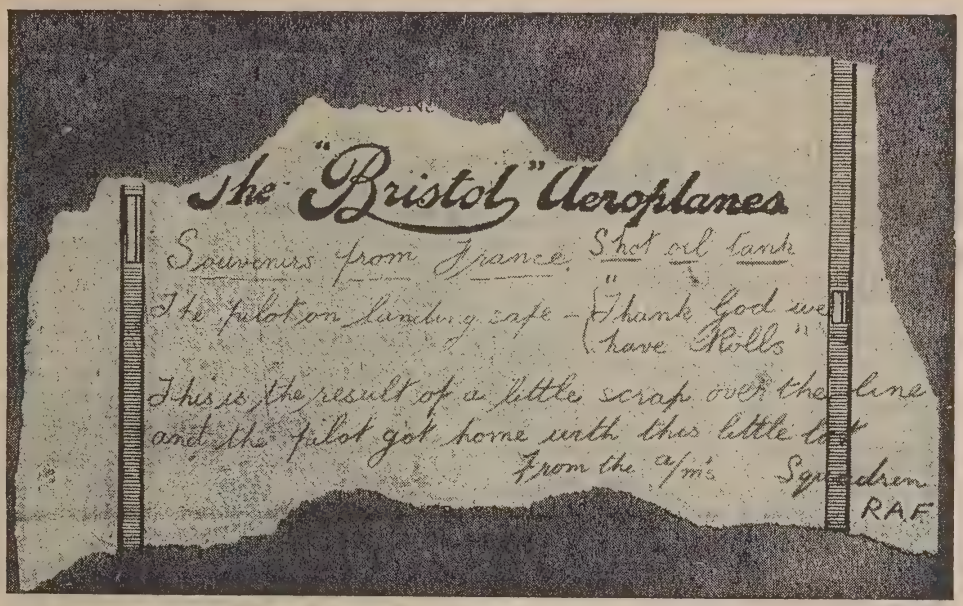


Front, Rear and Three-quarter Rear Views of the Fokker Biplane.

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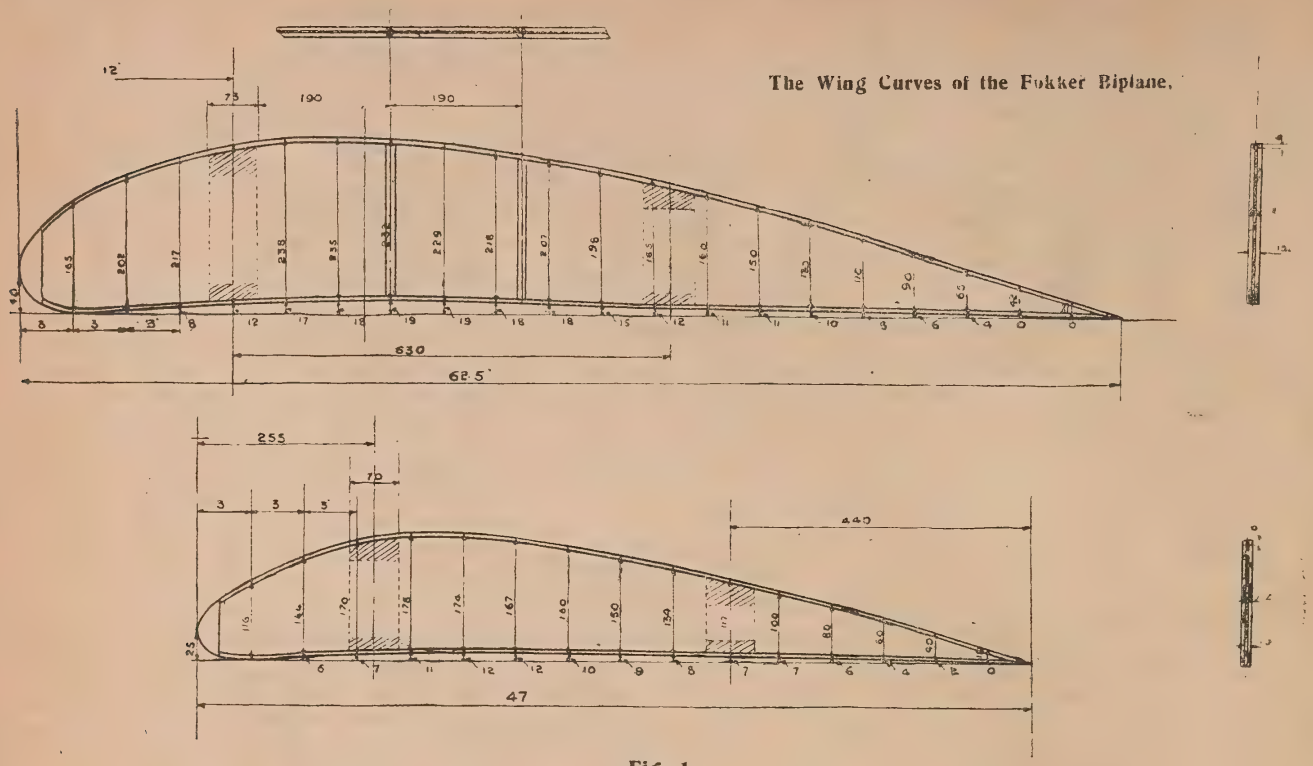


Fig. 1.

angle of incidence, and the inscription "Angle of incidence, 0°" is painted on the upper plane.

Wing Construction.

In sharp contradistinction to the fuselage, which is constructed of steel, even including members where wood is almost universally used, the wings contain no metal parts, if we exclude strut fittings and other extraneous features. There are no steel compression members, but where the internal wiring lugs occur, special box-form compression ribs are fixed. The leading edge is of very thin three-ply, which has a deeply serrated edge finishing on the main spar (Fig. 2). The ribs are of three-ply, and are not lightened, although holes are, of course, cut where necessary, to accommodate the control and bracing wires. A rib from the top centre section, and one from the root of the lower wings, are both drawn to scale in Fig. 1.

The extreme thinness of the three-ply has given rise to a new method of fixing the flanges on the ribs. Instead of grooved flanges tacked on so that the tacks run down the length of the three-ply, two half flanges of approximately square section are tacked together horizontally with the ply sandwiched between (see Fig. 2).

Spars.

As may be seen from the various sections drawn to scale in Figs. 3 and 4, the spars are made up of fairly narrow flanges at

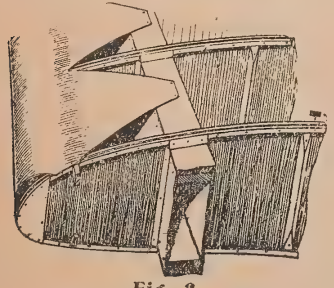


Fig. 2.

top and bottom, joined on either side by thin three-ply webs. They are placed approximately 30 cms. apart. The flanges are made of Scots pine, and consist of two laminations. The three-ply has the two outer layers of birch and an inner ply which is probably birch also.

The three-ply webs are tacked on to the flanges, and fabric is glued over the joint. The cement is an ordinary gelatine glue.

The spar webs are glued to the flanges by a waterproof casein cement, which is proved to contain gelatine, while the plywood adhesive—also a casein cement—is waterproof and of sufficiently good quality to withstand four hours' immersion in boiling water.

The trailing edge is of wire, and tape crosses from the top of one rib to the bottom of the next in the usual way. This tape lattice occurs about half-way between the trailing edge and the rear spar.

Fig. 3 shows the sections of the front and rear upper plane spars, taken in the centre section and at the interplane struts, while Fig. 4 gives the corresponding lower spar sections.

The ribs are stiffened between the spars by vertical pieces of wood of triangular section. There are two such pieces on each rib in the upper plane, and one in the lower plane

All the woodwork of the wings is varnished, and fabric is bound round the flanges of the ribs and glued to the top and bottom of the spars.

The workmanship is decidedly good, and the finish neat and careful.

Ailerons.

As in the triplane, ailerons are fitted to the top wing only, and are of the same narrow shape. They are constructed of welded steel tubing. They conform to common German practice, in as much as they are fitted to a false spar well behind the rear spar, and are balanced. The welded up control lever follows British

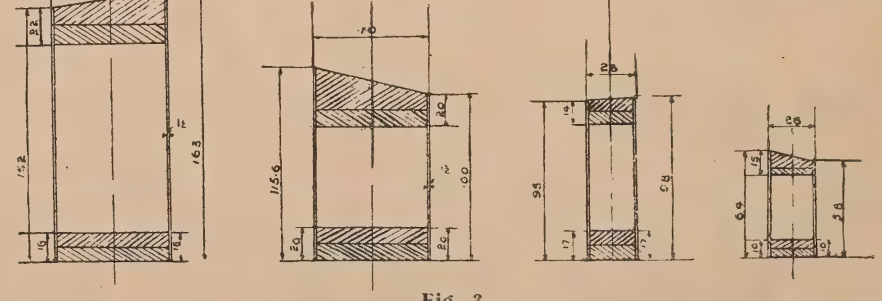


Fig. 3.

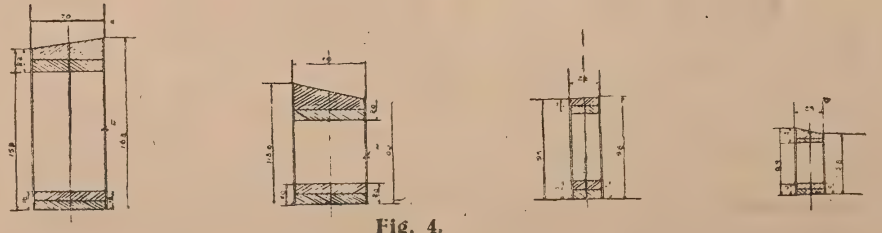


Fig. 4.

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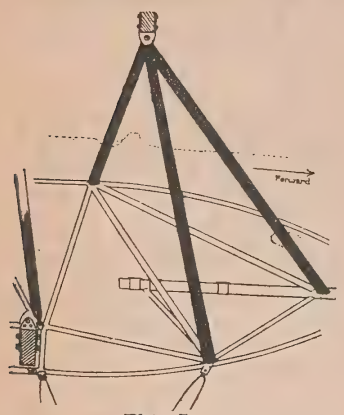


Fig. 5.

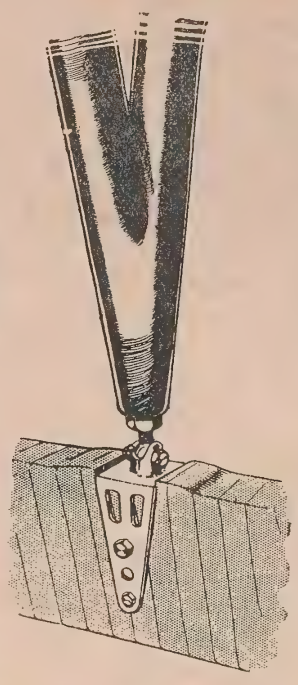


Fig. 6.

ideas, and does not work, as in most German designs, horizontally in a slot cut in the plane. All the tubing is lacquered.

STRUTS.

The struts are all of steel tubing of streamline section, and the centre section system is particularly worthy of attention. All those three struts which meet at a point on the front spar of the upper wing are welded to the fuselage framework, and are thus not removable when the machine is dismantled (see Fig. 5). The strut which joins the rear upper spar to the front lower spar, however, is not welded but is fastened by a ball and socket joint, which is the subject of Fig. 6. It will be noticed that the ball forms the extremity of a threaded bolt which is screwed into the end of the strut, thus making it possible to adjust the length of the latter. Both ball and socket are drilled and a bolt locked through the hole. The attachment of upper centre section struts to the wing spar is shown in Fig. 7.

As is made clear in the scale drawings, the interplane struts are of N shape when seen from the starboard wing tip. The three members of the N are welded together, and all four free extremities have the adjustable attachment described above. It has already been mentioned that there is no external bracing, the wing construction being made sufficiently strong against lift stresses to obviate its necessity, and the form of the interplane struts is interesting in this connection.

FUSELAGE.

This is exactly similar in design and construction to the triplane body—allowing, of course, for the difference in type of engine and for the fact that both wings have two spars instead of one. The longerons and cross struts are of circular section steel tube welded in place, and carrying at the corner the small quadrant of steel tube which carries the bracing. The diameters of these tubes vary from 22 mms. to 18 mms., and the steel was of 24 gauge in the places where the tubes had been pierced by bullets.

This bracing well repays attention. All sides of each section are cross-braced with piano wire, which is simply passed round the two lugs to be joined and has its extremities connected by means of a turnbuckle. This method has the great advantage that only two loops are required in the wire instead of four, and in consequence this bracing can be very rapidly assembled. It is also possibly lighter in relation to its strength than the usual arrangement of single wire bracing. Fig. 8 shows how a lifting handle is clipped on to the lower longerons.

The front part of the body is a particularly good piece of welding, and includes the engine and radiator supports as well as the arrangement by which the continuous spars of the lower planes can be placed in position. This is done by removing two fork-ended tubes (one each side of the body), and replacing these when the wings are in position. Fig. 9 shows how the wing spar is joined to the fuselage and Fig. 10 shows the fuselage joint at this point.

The cowling is of aluminium, and covers the front portion of the fuselage on all four sides. It is extended on the top to the cockpit, and underneath to beyond the rear spar. The cowls are arranged in convenient sheets, and are fastened by means of bolts and nuts of unusual shape. The nuts have small handles about 1 in. long, which enable one to manipulate them without tools. From the rear half of the cockpit to the junction of the tail and

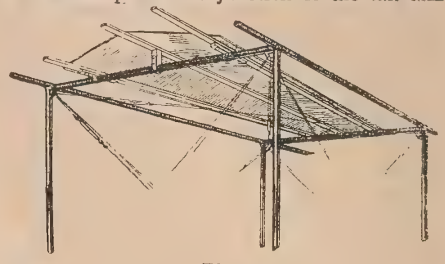


Fig. 11.

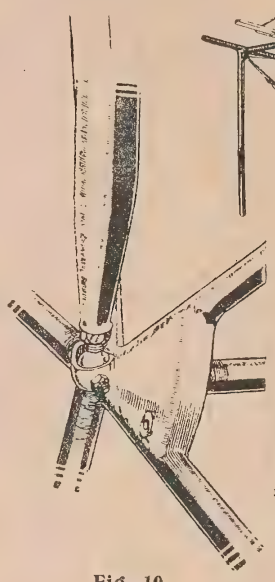


Fig. 10.

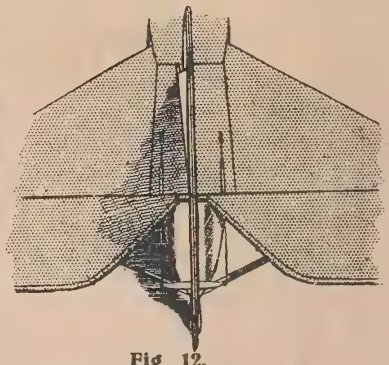


Fig. 12.

body, the top is furnished with a three-ply fairing, which extends over not quite the whole width of the fuselage. This is shown in Fig 11.

TAIL.

The fixed tail planes and elevators are almost similar to those of the triplane, i.e., the tail is triangular and the elevators balanced and divided, although they are actually made in one piece. The biplane, however, has a triangular fin whose foremost point is fixed an inch or two to the port side of the centre line of the machine, thus providing a surface which is inclined slightly to the longitudinal axis of the aeroplane. This is illustrated in Fig. 12, and is no doubt arranged to balance the tendency of the machine to turn to the left in flight, due to the slip-stream.

The framework of the tail is of circular section steel tubing throughout, including the trailing edges, and this framework is arranged to give the fixed tail plane a symmetrical camber. The attachment of the tail plane to the fuselage is simple and

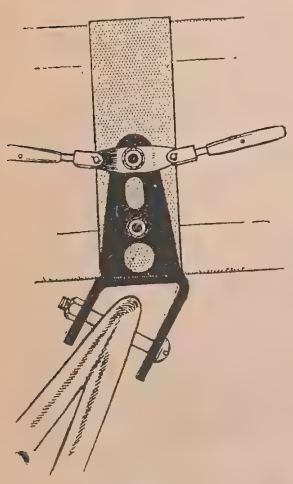


Fig. 7.

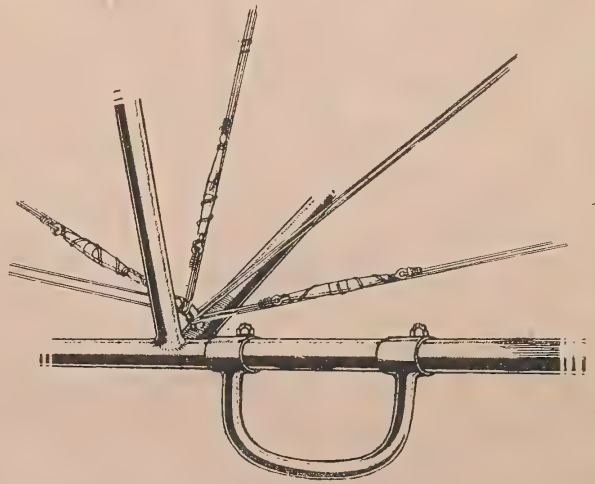


Fig. 8.

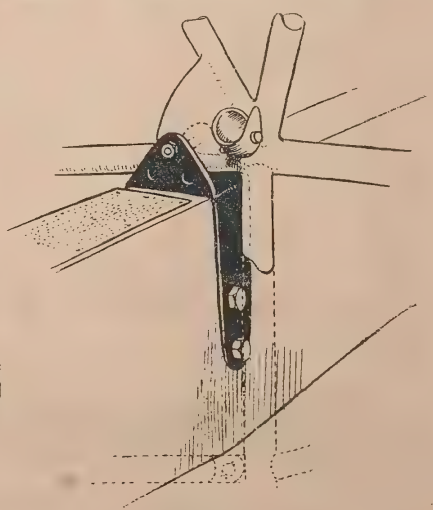


Fig. 9.

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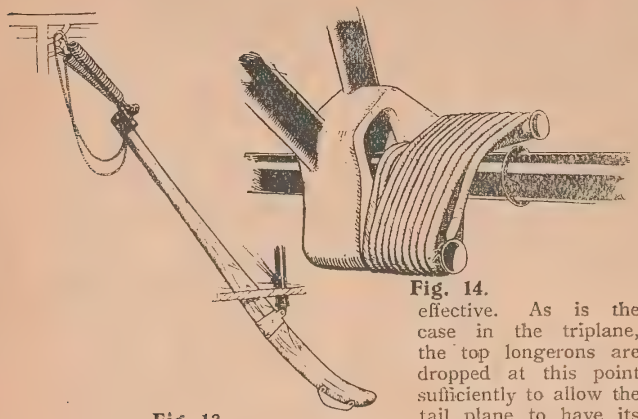


Fig. 13.

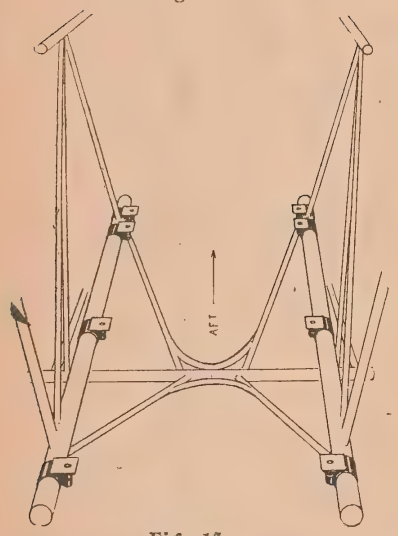


Fig. 14.

effective. As is the case in the triplane, the top longerons are dropped at this point sufficiently to allow the tail plane to have its top surface level with the top of the fuselage, and three bolts passing through the main steel tube of the tail and through short pieces of tube welded to the body framework secure it in this position. Of the three bolts, one is placed at either side of the top of the fuselage on the front of the tail, and one at the end of the body framework. The tail plane is set at a slight angle of incidence—about 3½ deg.—which is not intended to be adjustable, but which could easily be altered by means of a few washers and longer bolts. The tail is stayed by two streamline section steel struts, which connect the rear tube of the tail plane with the bottom of the sternpost, as is shown by the general arrangement drawings. These struts are not barbed.

From the sketch of the tail skid (Fig. 13), it will be seen that this member is balanced at a point about one-third of its length from its lower end, and that the shock-absorbing arrangement consists of two helical steel springs.

Undercarriage.

This is a feature of the machine which carries a distinct trace of British influence. The angle between the two limbs of the Vee is usually, in German aeroplanes, very obtuse; i.e., the two top points of attachment are widely separated, while British practice leans towards making this angle fairly acute. In the Fokker the angle between the struts is about 55 deg. The section of the steel struts is streamline in form, with major and minor axes of 65 mms. and 34 mms. respectively. The metal is of 20 gauge.

The upper attachments of the undercarriage struts are of the ball and socket type, with a bolt through, similar to the interplane strut illustrated above. The junction of the lower extremities and the slot which allows for axle travel is clearly explained by Fig. 14. The bracing cables, which connect the upper extremities of the front struts with the opposite lower ends, are attached in the usual manner to lugs welded on to the struts. It is interesting to note that in the crash which wrecked the machine, one of these lugs has torn out a small piece of the sheet steel of which the strut is formed, though there is no sign of fracture at the weld.

The least usual characteristic of the landing carriage, however, is the provision of a small cambered plane surrounding the axle, just as is the case in the Fokker triplane. This auxiliary plane has been badly battered, and few details are available, but the sheet aluminium box which surrounds the axle remains. This box is rectangular in section, and the edges are riveted together on the upper side. It forms the main and only spar of the plane, the construction of which is very similar to that of the main plane. The shock absorbers are of the coil spring type, and are wrapped in the manner illustrated in Fig. 14. The wheels are 760 × 100.

Engine and Mounting.

The engine is a Mercédès of 180 h.p. A full report on this type of engine has already been issued, but the present example possesses one or two minor points of difference from the standard. The chief of these is the fact that this engine has domed pistons, giving higher compression. If found sufficiently interesting, the engine will shortly be reported upon separately.

As has already been mentioned, the engine bearers are steel tubes, supported on a steel tubular structure welded up integrally with the fuselage frame and with the centre section struts. The diameter of these two parallel tubes is 34 mms. and the gauge 14. Each tube carries four "pads" of the type shown in Fig. 15, to which the crankcase is bolted.

Radiator.

The radiator, as may be gathered from the scale drawings and sketches, is of the car type (another departure from modern German design), and is supported by steel tubes which are part of the fuselage frame. The radiating surface is surmounted by a curved fairing, of which the port-side half is a brass water tank, into which the filler leads, while the starboard side is merely an aluminium fairing. The radiator is constructed of brass tubes arranged parallel to the engine crankshaft. The tubes are circular in section, but expanded into hexagons at either end and sweated up there. Each hexagon measures 7 mms. across the flats.

The single shutter, as will be seen on reference to Fig. 16, is normally held open by a spring, but can be closed at will by pulling a small cable. This shutter even when completely closed only puts out of action a small portion (roughly about one-third) of the cooling surface.

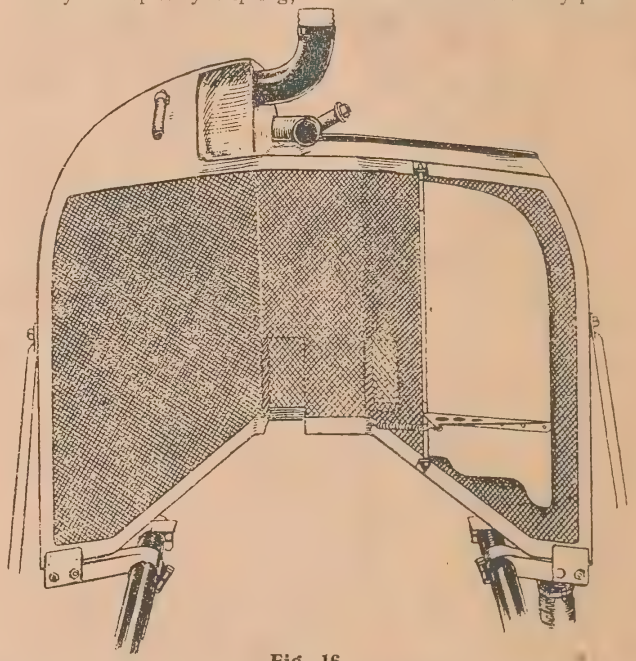


Fig. 16.

Petrol and Oil Systems.

There is only one fuel and oil tank in the machine. It is of sheet brass and is slung from cross tubes clipped on to the top longerons, just in front of the ammunition magazines, which are placed immediately in front of the pilot.

So far as can be ascertained from such external evidence as is afforded by fillers, piping, the lines of rivets on the tank, and the gauges and petrol cocks, it may be said that this tank is divided into two petrol tanks and one oil tank. The main petrol tank has a capacity for 61 litres (approximately 13½ galls.), and is provided with a baffle plate. The reserve tank holds 33 litres (approximately 7¼ galls.), while the oil tank carries 4½ galls. From the brass disc which is sweated to each flank of the tank,

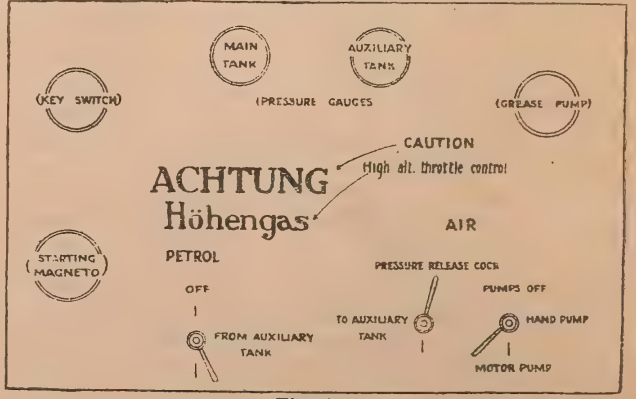


Fig. 17.

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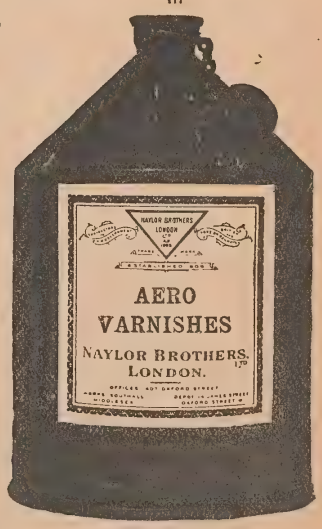
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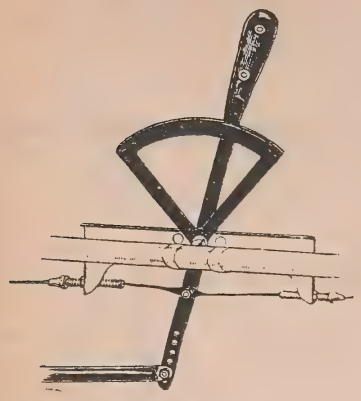


Fig. 18.

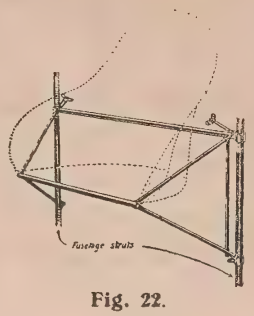


Fig. 22.



Fig. 19.

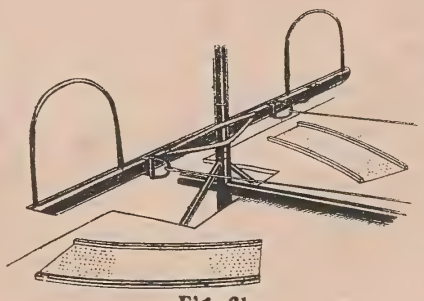


Fig. 21.



Fig. 20.

it would appear that a tie rod passes across the tank from side to side. Both petrol tanks work under pressure, obtained initially by hand-pump, and maintained by the usual mechanical air-pump. The dashboard carries, besides the main switches and a starting magneto, a two-way cock which allows the pilot to use petrol from the main or auxiliary tank, or to shut it off completely. A separate pressure gauge for each tank and two two-way air pressure cocks are also mounted. Fig. 17 is a diagram of the dashboard with the original German descriptions translated. The "Achtung, Hohengas" appears to be simply a warning to the pilot not to forget the extra air control. It does not seem to bear any relation to any instrument on the dash.

Throttle Control.

A sketch of the throttle lever, situated on the pilot's left, is given (Fig. 18). This lever actuates the carburettor throttle by the means shown. The compression tube between the quadrant and the balanced lever is over 4 ft. long and about ⅝ in. in diameter. Although heavy-looking, this control is, of course, made of very light gauge material. The adjustment provided at the pilot's end of the control should be noticed. This control works in conjunction with a Bowden type lever on the control lever, as shown by Fig. 19. The twin cables from this auxiliary throttle lever are attached to the main throttle control—Fig. 18 shows the attachments.

Controls.

The control lever of the machine works on precisely the same system as that of the triplane, but the grip at the head of the column is quite different. Reference to Fig. 19 will show that the usual two-handed grip is replaced by a single handle for the right hand.

The left hand is free to manipulate the auxiliary throttle control, inter-connected with the main throttle lever. It should also be noticed that the usual pushes for firing guns are absent, and the interrupter gear is actuated by pulling either or both of the levers by the fingers, while the thumb rests on the specially arranged place. There is no separate arrangement for firing both guns together, and it is not possible to lock the elevator controls in any given position.

The longitudinal rocking shaft carries at its front end two arms to which the aileron control cables are fixed (see Fig. 20). These wires cross; and pass upwards and outwards to aluminium pulleys on ball bearings, which are attached in pairs to a hinged sheet steel framework. On the way these cables pass through short tubular guides fixed to the top longerons. The aileron levers follow contemporary British practice, and project vertically above and below the plane.

The elevator control wires are taken direct from the control lever, one pair above and one pair below the fulcrum.

The rudder bar (see Fig. 21) is of neat and light welded construction. There is no adjustment to allow for variation in leg-length of different pilots, but it should be noticed that the pilot's seat is adjustable as regards height. The means by which this movement is obtained is exactly the same as the arrangement in the triplane, i.e., the seat is a sheet aluminium bucket with a three-ply bottom supported by a framework of steel tubes which grips the fuselage cross struts by four clips, which can be placed at any height. This is made clear by Fig. 22.

Armament.

This presents no unusual feature. Two fixed Spandau guns (Nos. 5,085 and 4,829) fire through the propeller path in the usual way. The working of the triggers operating the clutches of the interrupter gear has already been described.

The ammunition magazines and chutes are made of sheet aluminium, and the whole of the gun mechanism is within easy reach of the pilot.

Fabric and Dope.

The fabric is not attached in any way to the longerons, but is simply carried over the fuselage and laced along the bottom central line. There is a cross-piece of fabric laced to the cross tubes immediately behind the cockpit.

The fabric is coarse flax, coarser and less highly calendered than the type usually met with, and a good deal heavier.

It is colour-printed in the usual irregular polygons. The bright red paint, mentioned below, is removable by alcohol, but not soluble in it, coming off as a skin under the treatment.

Under the paint is a dope layer—an acetyl cellulose. Neither paint nor dope presents unusual features.

Weights—		
Paint	92.0	gms. per sq. m.
Dope	68.1	,, ,, ,, ,,
Fabric	143.6	,, ,, ,, ,,
	303.7	,, ,, ,, ,,
Strength	1772	k/m.
Extension	7.0%	

Where the wings are not painted, the fabric is covered with a thin layer of dope only.

The colouring of the machine is interesting. The top surface of the wings is painted a brilliant vermilion, while on the underneath surfaces the fabric is untouched, and is revealed as the familiar printed-colour fabric. The body is red in the front portion—where are the aluminium cowls—except the radiator, which is painted white. From the cockpit to the rear the colour is white.

The vertical surfaces of the tail are also white, and the horizontal surfaces—on both top and bottom—black.

Schedule of Principal Weights.

	lbs.	oz.
Upper wing, complete with ailerons, pulleys, bracing wires, fabric and strut fittings	156	0
Lower wing (no ailerons fitted), complete with strut fittings and fabric	97	0
N strut between wings	6	9
Straight strut, between fuselage and trailing spar of upper wing	2	8
Aileron frame, with hinge clips, without fabric	4	8
Rudder frame, with hinge clips, without fabric	4	11
Fin frame, without fabric	1	14
Tail planes (complete in one piece), without fabric	12	6
Elevators (complete in one piece), without fabric	11	2
Radiator, empty	48	0
Undercarriage strut, each	2	10
Undercarriage axle, with shock absorber bobbins	18	2
Bobbin, each	0	7
Shock absorber, each	3	9
Undercarriage (complete), without wheels and tyres, and without plane, but including struts	29	4
Aluminium tube, forming rear spar of undercarriage plane	1	8
Wheel, without tyre and tube	11	8
Tyre and tube	9	4
Tail strut	1	15
Fabric, per square foot, with dope	0	1
Bottom plane compression rib	0	15
Bottom plane ordinary rib	0	11
Top plane ordinary rib, at centre of plane	1	0
Bracket, with bolts, attaching top plane to fuselage struts	1	11
Main spar, top plane, including fillet for ribs, per foot run in centre	1	12

Owing to tapering ends the average weight per foot of the spars will be slightly less than this figure.

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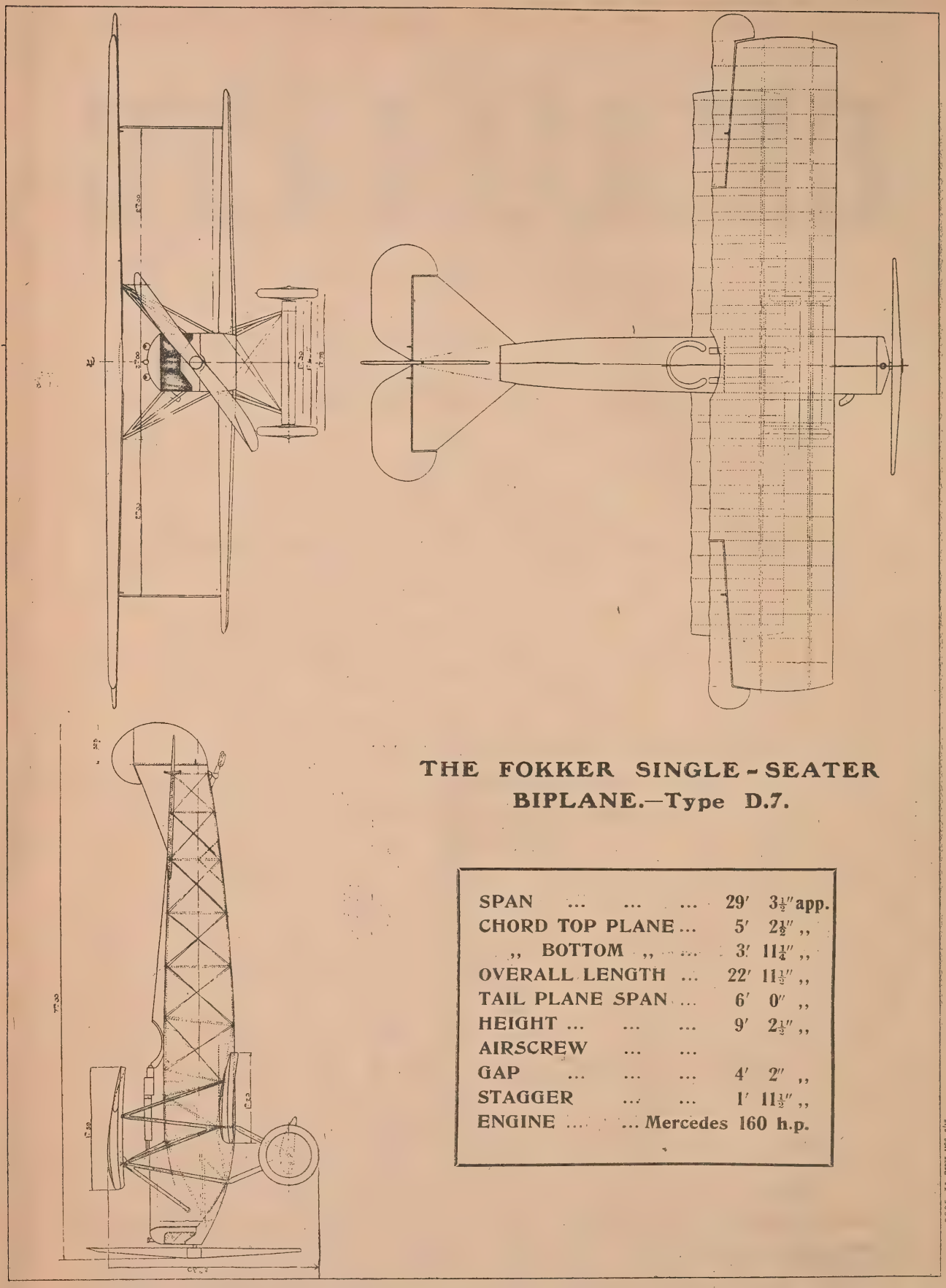
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Table 1. Approximate Equivalents of Millimetres in Inches, is very useful, the millimetres being shown to fractional parts of an inch in one table and advancing by decimals of an inch in Table 2. Table 3 is actually the opposite to the two preceding tables, the equivalents of inches and fractions of an inch in millimetre (advancing by decimals). There are 31 tables in all.

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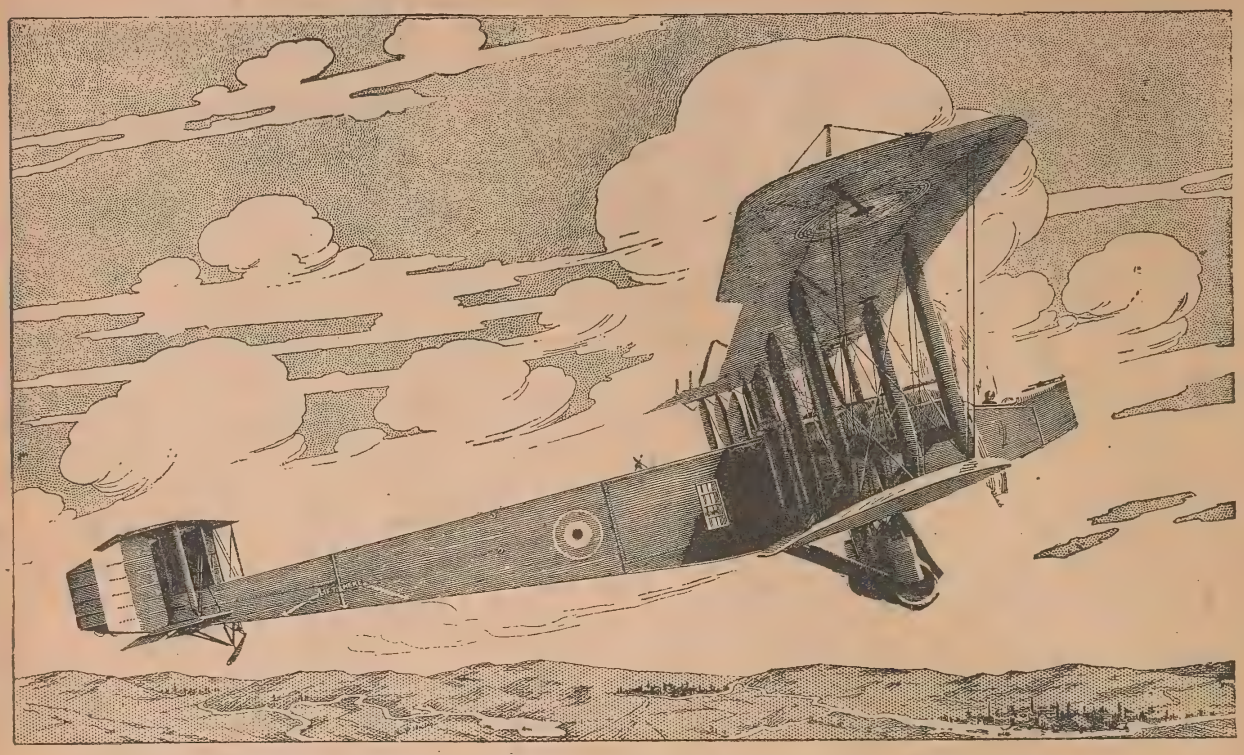
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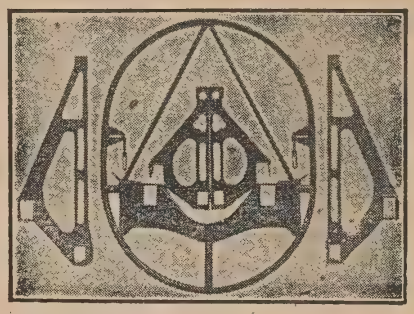
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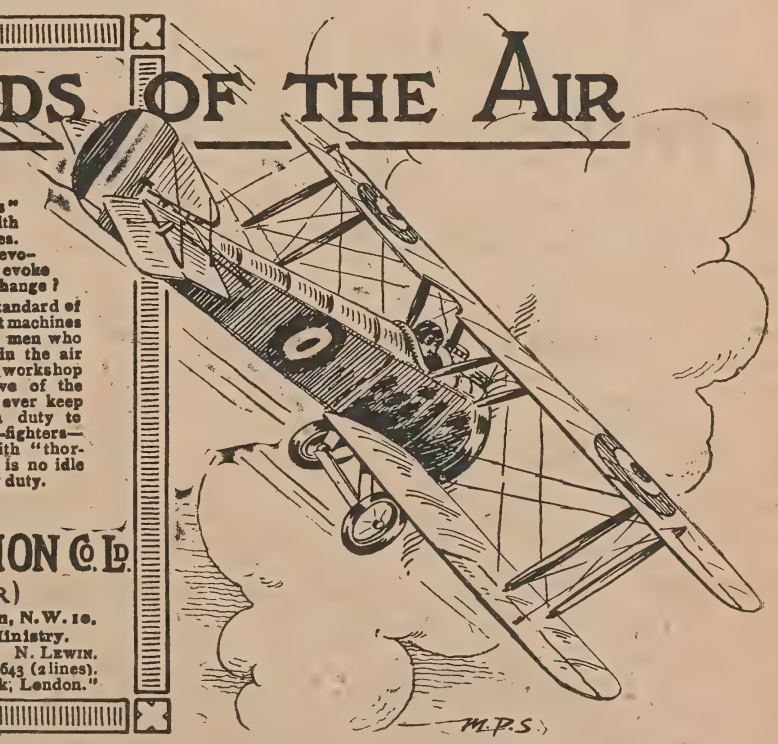
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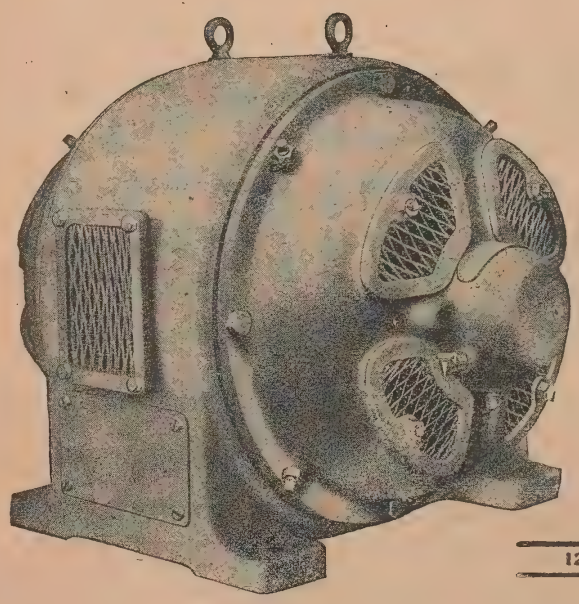
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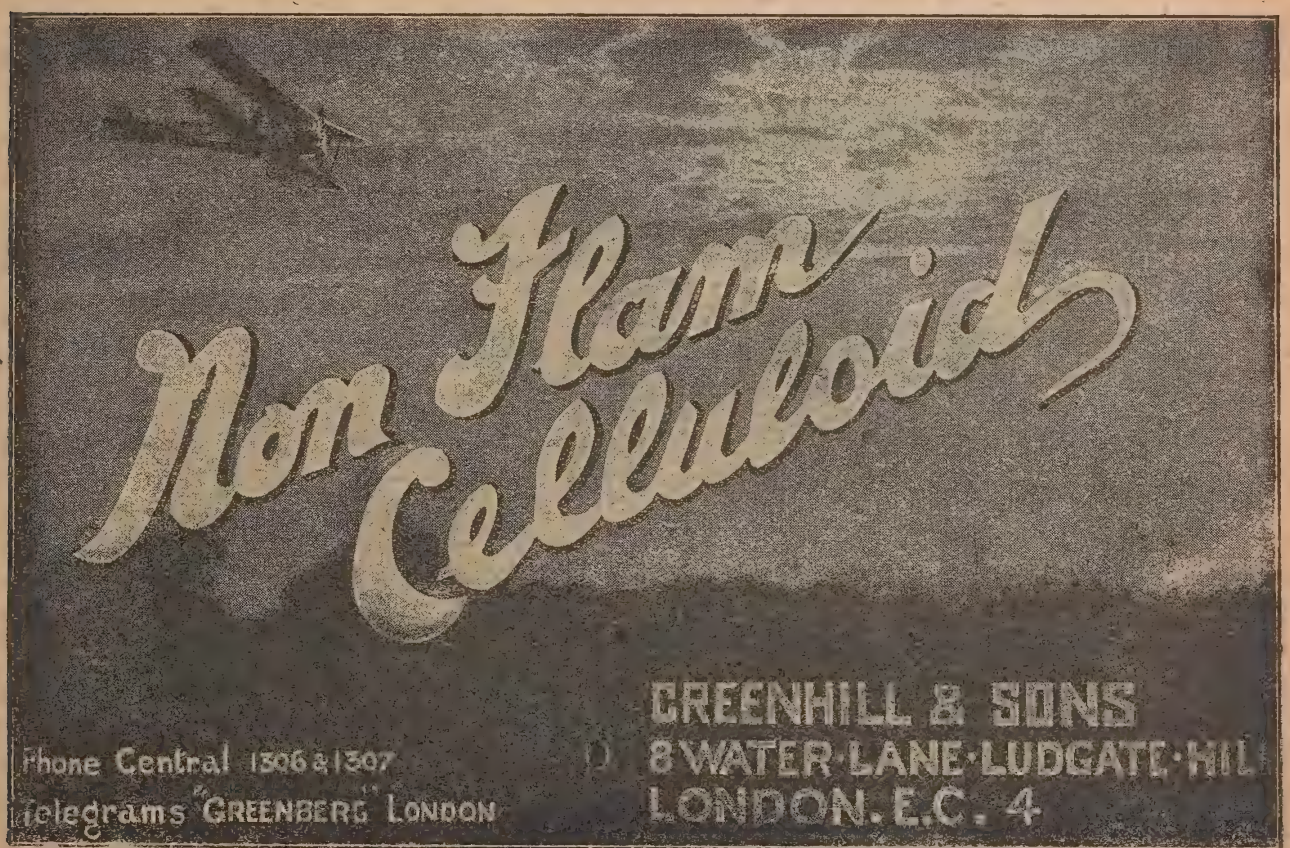
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Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.
C. G. Spencer and Sons, Ltd. (see under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

Balloons—

C. G. Spencer and Sons, Ltd., 50A, Highbury Grove, N.5. "Aeronaut, London." Dalston 1893.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 5927.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberrys, Haymarket, S.W.1. Regent 2165.
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

British Aeroplane Varnish Co., Ltd., 166, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312.
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleyprep, Piccy, London." Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Engines and Parts (continued)—

Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., 61, Hermitage Street, E. (Croid.) "Excroiden, Phone, London" Avenue 4611-2.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—

Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

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Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61..

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1011.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Lombard-Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Metal Parts and Fittings (continued)
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co, 30, Newgate Street, E.C.1., and at Glasgow Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd, 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. K. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemalvo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." 24214 Leeds.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semlon, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Southampton 1337.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd, Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
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Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Sparking Plugs—
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

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"The Aeroplane" Buyers' Guide.—*continued.*

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Rubery Owen & Co., Darlaston, South
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. East 955.

Varnishes (continued)—
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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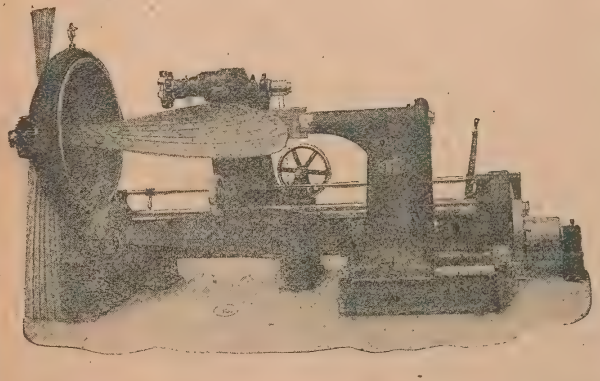
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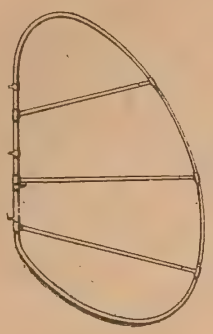
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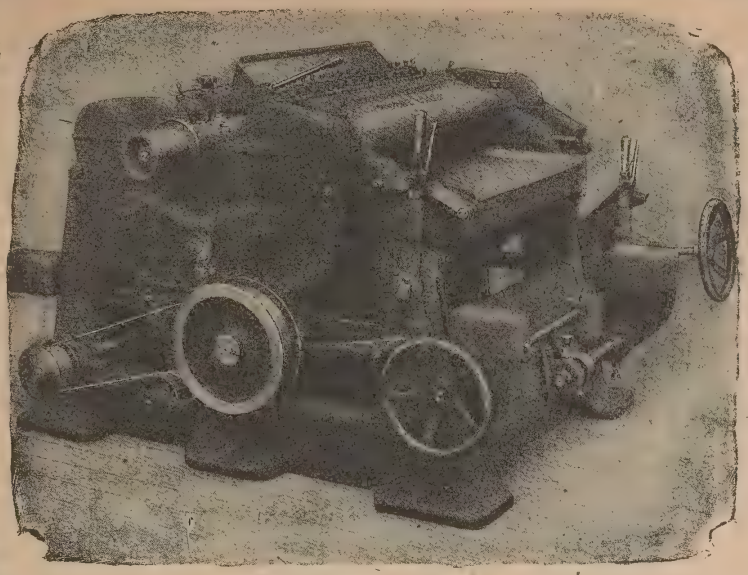
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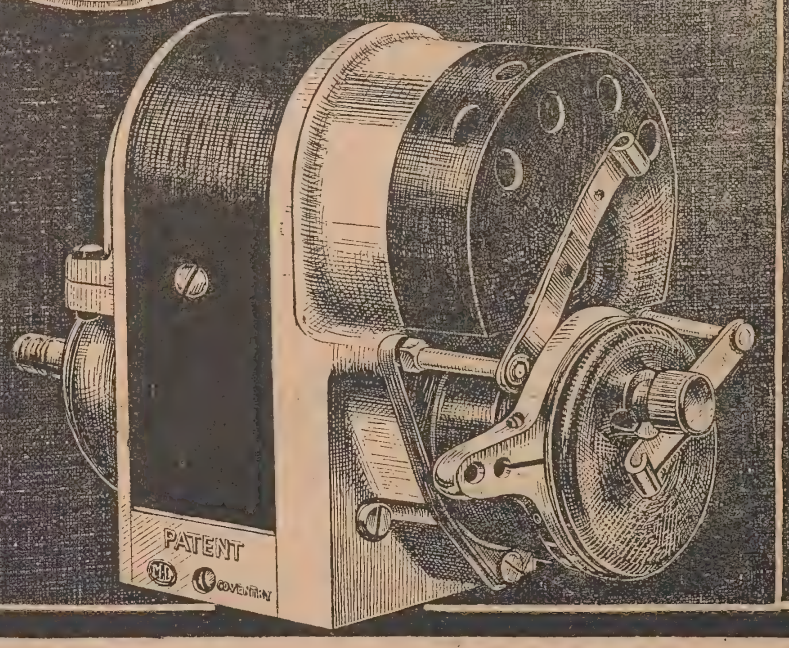
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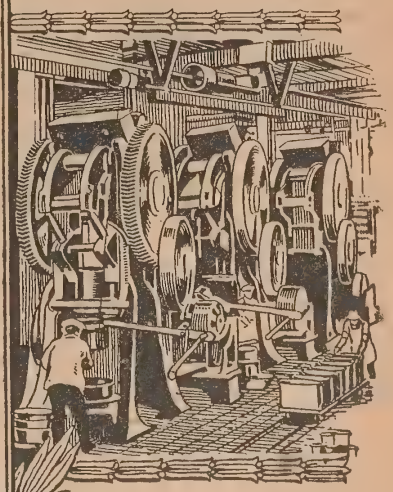


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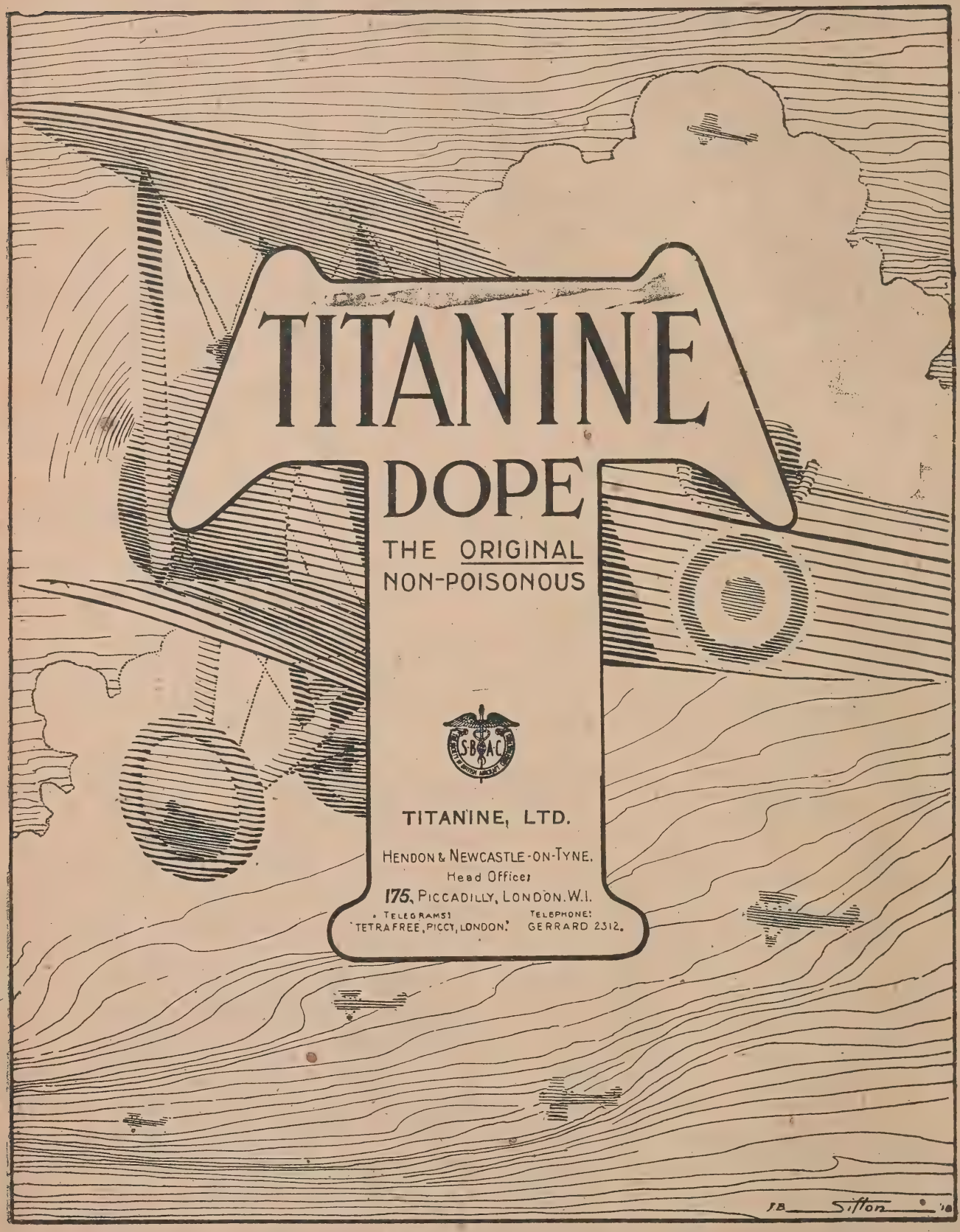
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SOME AERONAUTICAL FALLACIES.

BY AFRAES.

4.—That the Rigging should be Slack.

There was once a rather comic monoplane, somewhat similar in plan to a Blériot, but with the screw behind, exhibited at an early Olympia Aero Show. By and by it was taken down to Brooklands and came to a sad end by literally falling into the ten thousand odd bits of which it was composed at the end of its first two hundred yards taxi over the ground.

This was a particularly pathetic case of love's labour lost, for the most part of the machine's structure consisted of a highly complicated system of lattice girders built up of slips of wood held in place by screws so numerous that if Nettlefolds had received a single order for this quantity they would probably have run a special night shift to deal with it. The wiseacres of those days shook their heads over the wreckage and opined that the machine had collapsed because it was "too rigid." The machine did nothing of the kind—it collapsed because it was too *weak*.

But here, you see, there was already in existence a fallacy which has since then by no means failed to gain adherents. Beyond doubt, it was founded upon the fact that when steel guy wires were first used in the rigging of ships they gave rise to all sorts of difficulties, because they were so inelastic.

This difficulty was successfully got over by securing the wires, not directly to the bulwarks, but to the ends of loops of hemp rope secured thereto in turn. This rope has a certain amount of "give," very much more, of course, than a stranded steel cable, and it is this "give" which allows the rigging to settle down comfortably and "find itself."

Now the important point to notice is that in this case you have a very rigid superstructure, in the form of the masts and rigging, applied to a hull which is not by any means rigid, especially if it be made of wood.

As it goes through the water (which, as anyone who has made a bad "landing" on it realises, is a very hard fluid indeed), a ship's hull receives impacts in various directions and of various strengths, with the result that it distorts considerably. If, by means of a rigid rigging one prevents this distortion from taking place, this very rigidity results in local stresses achieving an intensity which the materials of construction are incapable of supporting. Something has to "go" somewhere, and it must be either the rigging or the hull according to which is relatively the stronger.

In the case of an aeroplane the conditions are almost entirely different, for, to start with, the air in which it flies is, to all intents and purposes, perfectly elastic, and, therefore, the hull is not subject to continuous distortions, nor, for the same reason, are the wings. In short, there is no reason whatever why the whole thing should not be quite rigid, for even when running on the ground the tyres and shock-absorbers insulate the structure from sudden shocks which would otherwise require "give" in some other part of the machine.

It must, however, be pointed out that very evil effects can result from a machine being rigged too tightly, but these are not immediately the result of rigidity *per se*.

It is obvious that if you go on tightening up turnbuckles indefinitely you will reduce any aeroplane that ever was made to matchwood, but this is because by tensioning the wires beyond a definite point you are imposing huge local stresses upon struts and spars to which they will yield, or which, in combination with the ordinary stresses of flying, will overload these members.

Absolute rigidity does not exist, but after a certain degree of rigidity has been attained it cannot, for practical purposes, be improved upon, and not only may additional tightening of wires impose local stresses, but these in turn may impair rigidity as well as weakening the whole structure.

There is no advantage to be gained from having sloppy rigging, since it is obvious that as soon as the load is imposed what was once sloppy now becomes taut. At the same time there is with sloppy rigging this very serious danger that the load may not be equally and uniformly distributed, with the result that one point gains strength at the expense of another.

For instance, a wing spar is a compression member, and, therefore, the essence of its strength is that it should be straight. If the rigging were very sloppy it might easily happen that the wires of one bay were more sloppy than those of the others. This would put a bending stress on the spar, which in turn would reduce its resistance to a compressional load.

If all the wiring is equally sloppy, or has the same degree of sloppiness relative to the work it has to do, then, it may well be argued, sloppiness is doing no harm.

This is true, but, at the same time, it is also doing no good. The fundamental objection to slackness in wiring is that this is a quality which you cannot readily measure, whereas tautness is quite easily measured, or, at least, tested. Whilst, therefore, no difficulty is met with in tensioning all wires up to a certain predetermined pitch, it would be very perplexing to arrange them so that they were of equal slackness.

I fancy that considerable colour has been lent to the "slack-rigging" fallacy by the fact that whereas in the old box-kite days one came across struts fixed to spars by means of cast aluminium sockets and all that sort of thing, to-day one finds the place of these cumbersome attachments taken by joints which permit a certain freedom of movement as between one member and the other. "Ha," says the fallacy-hugger, "this is so as to allow the wings to adjust themselves to gusts, and allow the spars to bend and 'give' a bit."

Needless to say the simple universal joint arrangement is introduced for no such reason at all. Apart from its secondary advantages of being lighter, of less resistance, and of more adaptability than the old-fashioned ferrule and socket, the articulated connection shows its chief merit in this, that it avoids local stresses on struts and spars whilst the machine is in process of erection.

If a solid joint is made for a 90 deg. angle in both planes, it is evident that any departure from this angle must impose a local stress either on the spar, or on the strut, or on both. Yet it is equally evident that, when the wings are first being erected and the wiring is being roughly connected, there must be a departure from the correct angle, and in point of fact this correct angle will only be achieved when the rigging is completed.

With articulated joints the wings can be set up many inches out of truth in all directions, yet without forcing parts to accept bending stresses when their natural function is to withstand compression only.

In other words the universal joint is principally called for by the fact that it is human to err, and that in consequence structures cannot be expected to be dead right from the first, but must be *put right* by a process of trial and error.

Another consideration which places the advocates of sloppy rigging out of court is this, that both in biplanes and monoplanes the system of triangulation which is employed involves the various members being loaded either in compression or in tension.

In no case should there be, strictly speaking, any bending stresses at all. If such are permitted to be introduced, the structure is necessarily weakened thereby. That being the case it is obvious that the only "give" which can take place will be either the stretching of the wires or the compression of the struts and spars—both of which must be practically microscopic and much too small to give the structure any claim to be regarded as elastic.

Still another point is worthy of mention. Suppose a machine to be rigged very sloppily, as indicated in Fig. 1, which represents it as loaded in flight; i.e., with the flying wires taut and the landing wires doing nothing. If such a machine should make an "*atterrissage brusque*" the wings will take up very suddenly the position indicated in the dotted lines, and they will then be "brought up," as it were, by the landing wires, which, in consequence will receive a very heavy stress indeed—possibly more than they can bear.

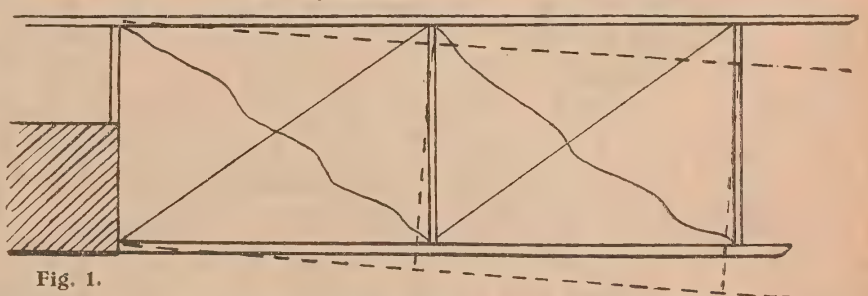


Fig. 1.

If, however, the landing wires are reasonably tight whilst the aeroplane is flying, this sharp stress, which is due to the downward momentum of the wings, will be largely avoided. If you want to break a piece of string you snatch it, and thereby strain it much harder than you could by a direct pull.

[The point of this argument is even better realised if one thinks for a moment about what happens if a pilot goes to makes a loop, takes it too slowly, and suddenly falls over backwards at the top, instead of maintaining enough centrifugal force to keep the load on his flying wires all the way round, and throws the whole weight of the machine onto the landing wires.—Ed.].

WAGES AWARDS.

From Aug. 10th, 1918, an advance of 3s. 6d. per week is to be paid to skilled woodworkers, painters, polishers, dopers, and upholsterers employed in aircraft establishments, that is, any manufacturing establishment engaged wholly on the manufacture or repair of aeroplanes or seaplanes or of components or parts thereof, and any workshop belonging to a composite establishment in which such work is exclusively carried on.


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PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patents Applications.

Aeronautical Instrument Co. Aircraft. No. 15167. Sept. 18th.
Austing, L. E. Device for indicating equilibrium and changes thereof in aircraft, ships, etc. No. 15407. Sept. 21st.
Benjamin Electric Co. Manufacture of cowls or covers for aeroplane engines. No. 15315. Sept. 20th.
Bingley, F. Cowling, etc., for aircraft. No. 15176. Sept. 18th.
Bingley, F. Girders, spars, etc., of aircraft, etc. No. 15177. Sept. 18th.
Birmingham Guild Aeroplane struts, etc. No. 15202. Sept. 19th.
Brunner, G. E. de. Balance-indicators for aircraft, etc. No. 15131. Sept. 17th.
Brush Electrical Engineering Co. Driving aircraft. No. 15247. Sept. 19th.
Calthrop, E. R. Parachutes. No. 15061 Sept. 16th.
Calthrop, E. R. Parachutes. No. 15062. Sept. 16th.
Calthrop, E. R. Parachutes. No. 15393. Sept. 21st.
Coats, A. Anchorage for compressional and tensional members in aeroplanes, etc. No. 15096. Sept. 17th.
Davies, R. L. Clinometers for aircraft. No. 15174. Sept. 18th.
Flanagan, W. L. J. Apparatus for distributing pamphlets, handbills, etc., from balloons, kites, etc. No. 15148. Sept. 18th.
Hooker, E. Apparatus for holding Verey pistol upon aircraft. No. 15198. Sept. 18th.
Hubbard, R. S. Construction of metal framework of aeroplanes, etc. No. 15050. Sept. 16th.
Ivers, D. Air-pressure feed petrol tanks for aeroplanes, etc. No. 15081. Sept. 17th.
Johnson, H. T. Silencing-arrangements for flying-machines, etc. No. 15321. Sept. 20th.
Lodge, J. H. F. Folding-doors, screens, or partitions for aircraft sheds. No. 15348. Sept. 20th.
Marshall, J. F. Apparatus for directing anti-aircraft guns. No. 15053. Sept. 16th.
Menco-Elma Syndicate. Control-apparatus of aircraft. No. 15109. Sept. 17th.
Phillips, E. W. Apparatus for reproducing in miniature movements of aircraft. No. 15271. Sept. 20th.
Phillips, E. W. Reproducing appearances of shell bursts in the air. No. 15272. Sept. 20th.
Pilling, J. W. Cutting or shaping propeller blades for aeroplanes, etc. No. 15213. Sept. 19th.
Raikes, C. S. M. Apparatus for teaching aerial gunnery. No. 15338. Sept. 20th.
Rouse, G. M. T. Muzzle attachment for continuous firing of blank ammunition in Vickers' aerial type machine-gun. No. 15373. Sept. 21st.
Thomas, H. H. Aerofoils and wing structures. No. 15132. Sept. 17th.
Vickers, Ltd. Aircraft. No. 15190. Sept. 18th.

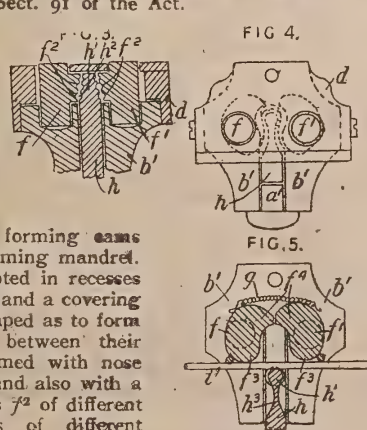
Complete Specifications Accepted, Prints of which can be Obtained on and after Oct. 10th, 1918.

118,859. June 12th, 1917. Calthrop, E. R. Parachutes.
118,860. June 12th, 1917. Calthrop, E. R. Safety-spring slings or suspension devices, particularly adapted for use with parachutes.
118,931. Oct. 27th, 1917. Mooney, D. J. Metal construction for the planes and control surfaces of aircraft.
116,894. June 19th, 1917. Athimon, F. Pliers for forming loops and eyes in aeroplane stay wires.

Abridgments of recently Published Complete Specifications.

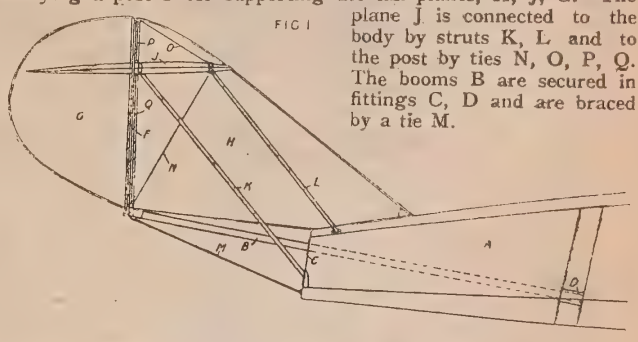
116,894. Pliers. Athimon, F., St. Mars la Jaille, Seine Inférieure, France. June 12th, 1918, No. 9660. Convention date, June 19th, 1917. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act.

Pliers for forming loops or eyes in the stay wires of aeroplanes compromise a pair of pivotally-connected crossed handles, the upper ends of which are provided respectively with a pair of pivoted forming cams and with a co-acting forming mandrel. The cams f, f^1 are pivoted in recesses in the handle member b^1 and a covering member d and are so shaped as to form a frusto-conical cavity between their opposed faces being formed with nose parts f^2, heel parts f^3, and also with a series of annular grooves f^2 of different sizes to receive wires of different diameters. The cams are normally held with their nose parts f^4 in contact by a spring g. The mandrel h, carried by the handle member a^1 is formed with a frusto-conical part h^1 having grooves h corresponding to the grooves f^2 and a part h^3 with concave sides. In use, the stay wire i is inserted between the heel parts f^3 of the cams and the part h^1 of the mandrel within the grooves f^2, h^2 corresponding to the size of the wire, and the jaws are closed. The cams turn against the action of the spring g and the wire is bent closely about the mandrel h.



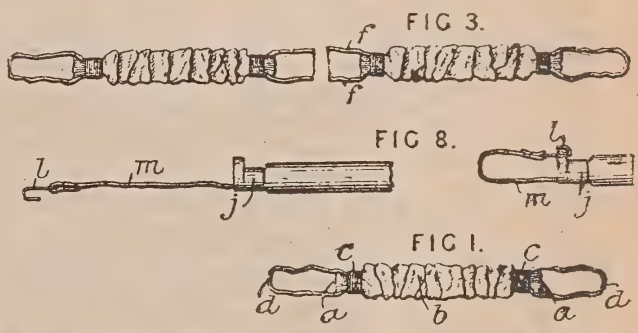
116,951. Aeronautics. King, H. G., 67, Avenue Road, Itchen, Hampshire.

Planes, Arrangement of.—The body A of a flying-boat has a truncated end from which extend two converging booms B carrying a post F for supporting the tail planes, H, J, G. The plane J is connected to the body by struts K, L and to the post by ties N, O, P, Q. The booms B are secured in fittings C, D and are braced by a tie M.



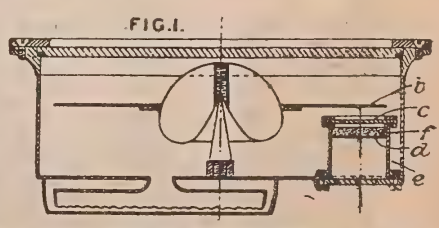
116,975. Elastic cords. Wareham, H. J., 146, Blackfriars Road, London.

Relates to elastic cords for muscle exercisers and shock-absorbers, or for use in aeroplanes, gun mountings, throwing-appliances, etc. The cord comprises an india-rubber centre a provided with a cover of fabric b of greater length than the unstretched centre, so that the cover assumes a crinkled form. The cover may be attached to the centre a by whippings c or metal rings, which secure also turned back extensions d forming end loops. Fig. 3 shows a form in which two cords are connected by portions f. Fig. 8 shows a metal ring j formed with a hole adapted to receive a hook l on the extension m to form an end loop.



117,641. Magnetic Compasses. Julyan, H. E., 7, Sherwood Street, Piccadilly Circus, and Weilbach, E. C., 13, Somerfield Road, Finsbury Park, both in London.

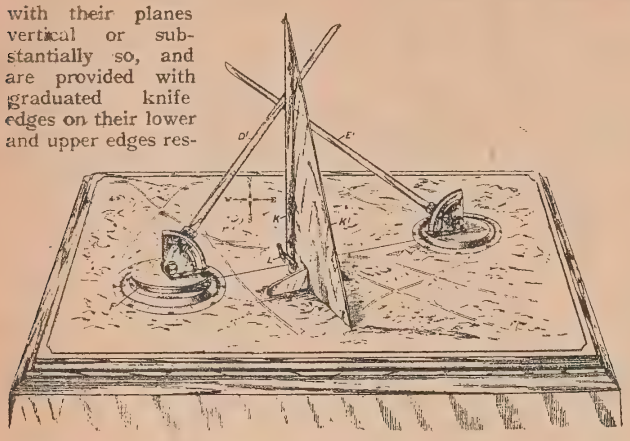
The illumination for reading purposes of the cards of military, aircraft, and mariners' compasses is effected by the employment of a card b having perforated lettering or figures and providing beneath it at a fixed point, such as the lubber line, an illuminating cell consisting of upper and lower circular glass discs c, d, between which is a quantity of radium compound.



117,747. Range-finders, etc. Rye, A. L., Richborough, Kent.

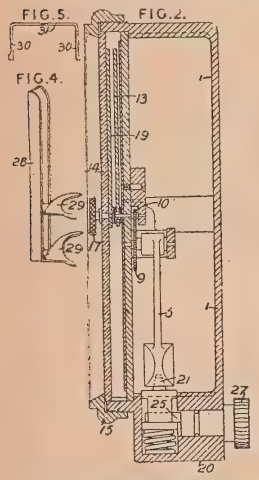
In height and range finders of the kind in which two indicator arms D^1, E^1 pivoted on rotatable mountings disposed above the positions of the observation stations on a map are set in accordance with data ascertained at the observing stations, a movable vertical knife-edge K being also provided, the arms D^1, E^1 are arranged

with their planes vertical or substantially so, and are provided with graduated knife edges on their lower and upper edges res-

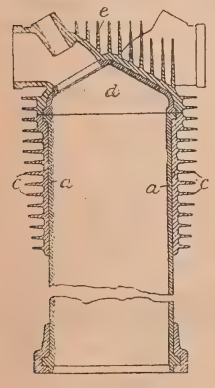


pectively. Difference in height between the stations is compensated for by the insertion of a packing-disc F and the knife-edge K is adjustably mounted on a support K^1 so that its zero may be brought to the level of the pivot of one of the arms. The support K^1 carries a point L which can be depressed to mark the map at the point below the vertical knife edge K, the marked points serving to determine the horizontal velocity of the target. The mountings for the arms D^1, E^1 may be sunk in the map so that the pivot points are flush with its surface.

117,812. Clinometers. Rougerie, J., 190, Rue de Loumel, Paris. July 17th, 1918, No. 11736. Convention date, Aug. 25th, 1917. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act.



A clinometer comprises a casing 1 within which is mounted a pendulum 5 carrying a pinion 9 engaging a pinion 10 on the spindle of which is mounted an indicating finger 13. The glass window 14 is attached to the casing by means of a screwed ring 15 and has mounted on it a hand-operated pointer 19 which may be turned to any angle by means of the knob 17. The casing is provided with a base 20 ground or finished true for application to the surface to be tested. The pendulum is held fixed during transport by means of a spring-pressed detent 21 which enters a hole in the pendulum and may be released by turning the eccentrically mounted finger 25 by means of the milled head 27 It is stated that for adjusting and instantaneously verifying the strokes or periods of the "Rhone" motor, the apparatus is placed on the foot shown in Fig. 4, comprising a channel 28 to which are fixed two flared claws 29 adapted to be placed between the wings of the cylinders. For applying the indicator to a "Clerget" motor, the foot shown in Fig. 5 is employed, comprising two branches 30, the bottoms of which are applied to the cylinder, the indicator being placed on the top 31.

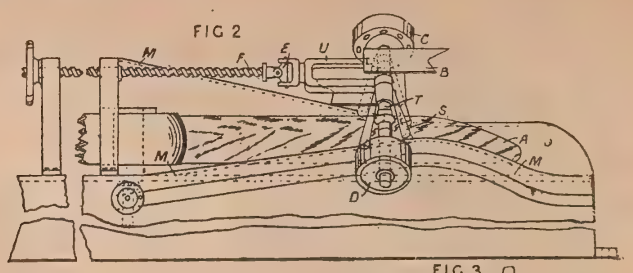


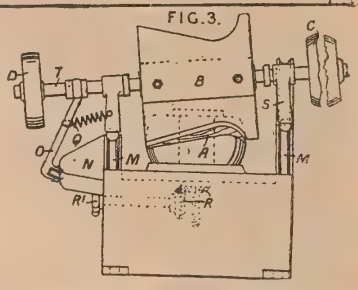
117,596. Internal-combustion Engines. Guy, S. S., Woodview, Finchfield, Wolverhampton.

Cylinders, Cooling.—The cylinder barrel *a* and head *d* are separate and each has cast on it cooling-fins *c*, *e* of a lighter metal such as aluminium.

117,175. Shaping propellers, etc. Herbert, F. A., 119, Holland Park Avenue, and Baxter & Caunter, 219, Tottenham Court Road, both in London.

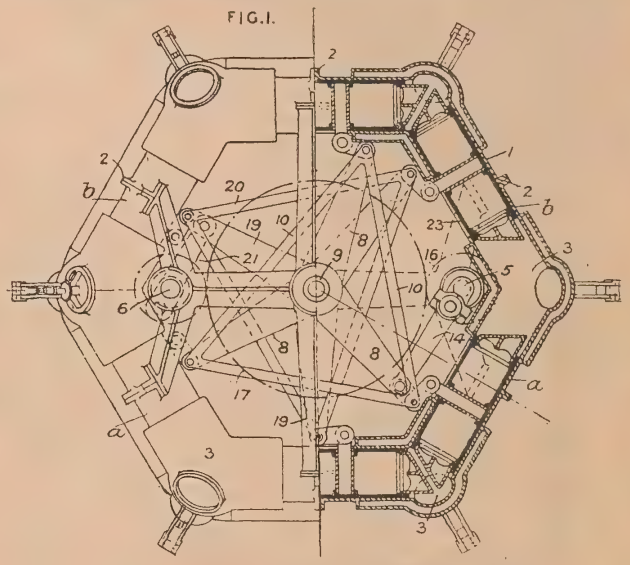
In a machine for shaping propellers, etc., a rotary cutter B is adapted to be moved simultaneously along and transversely to the work, and to be tilted to varying angles. The work A is secured to a table J, the height of which is adjustable by a hand-wheel R^1 and bevel-gearing R. The cutter shaft T is fed along the work by a hand-operated screw F connected to it by a universal joint E and a fork U. Frames S which carry the





bearings for the shaft are carried by balls running in grooves in undulating guides M which effect the varying tilting of the cutter. An arm O secured to the shaft T by collars is pressed by a spring Q into engagement with a cam N which effects the axial movement of the cutter. An electric motor C is mounted on one end of the shaft T and a fly-wheel or counter-weight D at the other.

117,684. Internal-combustion Engines. Williams, A. H., 2, Waterloo Road, Chester.



Compression Engines; driving-gear.—Cylinders 1, 2 are arranged in polygonal formation around a central driving-shaft 9 and contain double-acting pistons which are acted upon in pairs by explosions occurring in chambers located at the angles of the polygon. Fig. 1 shows a four-stroke-cycle engine in which the pistons of alternate cylinders *a* are connected to oscillating arms 8 one of which is connected to a crank-shaft 5 by a rod 14, the shaft carrying a pinion 16 which gears with a wheel 17 on the main shaft. The pistons of the cylinders *b* are similarly connected through arms 19 and a rod 21 to a crank-shaft 6 carrying a pinion which gears with the wheel 17. Each set of arms 8, 19 is braced together by rods 10, 20 respectively. Inlet and exhaust valves, actuated from the main shaft through two-to-one gearing, are mounted in the combustion chambers 3 which are each common to two pistons. Slots 23, through which the gudgeons pass, may be uncovered by the pistons and thus serve as exhaust ports. The engine may comprise one or more cylinder units.

A WHITESIDE ENTERTAINMENT.

On Saturday, Sept. 14th, at the Birkdale Conservative Club, the employees of the Whiteside Aircraft Department entertained 60 wounded soldiers from the Woodlands and Grange Hospitals, and the guests spent a very enjoyable afternoon and evening. The soldiers were received by Mr. G. P. Whiteside, president of the special committee appointed to entertain the men

There were whist and billiard competitions, but the inclement weather made the proposed bowling handicap impossible. Money prizes were presented to the winners of these competitions.

The band of the National Reserve played pleasing selections of music during the afternoon and evening.—R.M.

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MILLING CUTTERS, REAMERS,
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ENGINEERS, LONDON.

"GWYNNE, LONDON."

COMMERCIAL AERONAUTICS

OPERATING COSTS.

By "Medway."

The subject of operating costs of aeroplanes engaged on commercial services is one which will need to be thrashed out pretty thoroughly before sane investors are likely to be persuaded to go very deeply into any of the numerous proposals that are certain to be put before them.

Many of these proposals will, undoubtedly, be nothing more nor less than traps for mugs. We shall doubtless be treated in prospectuses to weird collections of figures professing in the aggregate to represent the estimated costs of services, and also the estimated receipts.

As regards the latter we shall be able to do no more than form our own opinions in view of the success or otherwise that may by that time have attended services already inaugurated. As regards costs, it ought to be possible by collecting the information available in various quarters to arrive at some fairly sound estimates.

First Efforts.

So far as I am aware, the best that has been done in that direction at present is to be found in the paper which Mr. Holt Thomas read before the Aeronautical Society last year. This paper was put before people who knew something about the subject, and, therefore, it was quite excusable in it to make statements which might be misconstrued by the ignorant. For example, Mr. Holt Thomas stated that he had found that the running costs of four types of aeroplane would be not more than those of many motor-cars, the actual figures working out at 2¼d., 4¾d., 5½d., and 3½d. per mile respectively.

These figures were based on pre-war petrol costs and machines of old type. For modern machines carrying 1,800 lbs., including pilot and fuel, he put the running cost at 6½d. a mile; and if carrying 450 lbs. useful load, including pilot and fuel, at 2½d.

Running Costs versus Operating Costs.

Now, it is clear that these figures have very little relation to the total cost of operation. The biggest items in the latter would be those due to depreciation and maintenance, and to the establishments necessary at terminal and intermediate points. We cannot get at the real cost of a service by knowing merely cost of fuel and oil used.

The total operating costs would be to a tremendous degree dependent upon the regularity and frequency of service. Supposing we only wanted to run three times a week between, say, London and Paris, we should still require landing grounds at each end and at intermediate points. The costs of management, clerical work, and advertising would not be much less than would be the case if we were to run three or four machines a day.

Figures for Consideration.

In his estimates for a daily service each way between London and Paris, Mr. Holt Thomas put overhead charges—*id est*, management, clerical work, advertising offices and contingencies—at £14,000 a year, or, approximately, £40 a day for six hundred miles, which equals 1s. 6d. a mile.

If we found that the custom only justified us in running half as many trips, we should be able to save very little in overhead charges, and the cost per mile under this heading would be something like 2s. 6d.

Then, again, he put the annual cost of sheds at London, Paris, and intermediate points at about £1,600, working out at approximately 2d. a mile. Presumably, this included the ground retained for starting and landing purposes. If the number of trips were halved, the cost here would run up to about 4d. a mile.

As regards labour at the terminals and intermediate points, this, in his estimate, worked out at 6d. Halving the trips does not mean halving the labour employed, so the less frequent service would show this item at nearly 1s. a mile.

On the other hand, the interest on capital outlay would be almost directly dependent on the number of machines employed, and so, roughly speaking, would be the salaries of the pilots. The same applies also to depreciation, but the cost of repairs and overhaul would hardly be reduced in proportion to any reduction in the number of trips.

Altogether, one sees that if the custom is only half as good as has been expected, the total cost of 4s. 8d. a mile arrived at by Mr. Holt Thomas might easily run up to seven or eight shillings a mile, for an aeroplane carrying 12 passengers or 2,000 lbs. of mails, parcels or goods.

The More the Merrier.

On the other hand, if a really frequent service, say, hourly, throughout the day, proved to be justified, overhead charges and standing costs per mile would be much lower than is estimated. If we take Mr. Holt Thomas's figures as follows:—

	Per Mile. s.	d.
Petrol and Oil	0	8
Depreciation and Repairs	1	3
Interest on First Cost	0	3½
Pilots	0	3½

we get 2s. 6d. as a minimum cost per mile without reckoning sheds, landing ground, labour or overhead charges.

On a very frequent service all these latter might be covered by approximately 6d. a mile for the lot, so that we get a total cost of 3s. a mile, which cannot conceivably be further appreciably reduced, unless engines can be made vastly more efficient, and depreciation immensely reduced by the construction of comparatively cheap machines capable of remaining safely in service for a very long life measured in miles, and without frequent overhauls.

Depreciation and Insurance.

It must be noted that in this rough estimate nothing has been allocated specifically to replacement of old by new machines, which are assumed to be paid for out of the depreciation allowance. If it is reasonable to suppose that, in commercial service, the average life of a machine may be about 2,500 hours, then we should only have to charge about £1 for every hundred miles against replacements of aeroplanes.

Another item not separately mentioned is insurance, which might very well involve a considerable expenditure, especially if all risks are to be covered in connection with a passenger service.

Altogether, I am led to the conclusion that Mr. Holt Thomas's final estimate of 3s. a mile for the London-Paris service represents quite the best that can possibly be expected for a long time to come, and that so good a figure could not be maintained unless the service involved at least one trip each way daily and preferably two trips each way.

The full complement of the type of machine contemplated would be 12 passengers. It is never safe to estimate for an average of more than two-thirds of the full seating capacity. Consequently, fares at the rate of 4d. a mile would, under the best circumstances, just cover cost and no more.

Minimum Fares.

To see a working profit and also to cover various contingencies not dealt with above, one supposes that it would not be safe to put fares appreciably lower than 6d. a mile, which, for the London-Paris run, would make about £7 10s. for the single journey. Altogether, so far as we have gone, at present, one's conclusion is that any sound business proposal for a regular service between densely populated centres would have to be based on a very strong opinion to the effect that good regular custom would be secured at a fare of 5d. a mile.

For less frequent services between smaller places considerably higher fares would be necessary, unless subsidies were obtained for the carriage of mails or other purposes. If the carrying capacity of machines had to be lower than 12 passengers in view of the limited extent of the estimated custom, then, again, the rates per mile would need to be higher. But if the business were big enough to justify the use of aeroplanes of very large carrying capacity the fares might be reduced.

Thus, it is conceivable that, finally, a London-Paris service might be conducted partly by very large machines travelling at moderate speed with fares at the rate of about 3d. a mile, supplemented by a more frequent, and, therefore, more convenient, but, at the same time, more expensive service of smaller express aeroplanes.

CARGO AND TRANSPORT.

Sir,—For some weeks past a writer in your columns, who has adopted the *nom de guerre* of "Medway," has been contributing a series of highly interesting well-thought-out articles on the Commercial Problems of the Aeroplane.

It so happens, that I, too, in my muddy-brained fashion have frittered away a certain amount of grey matter in reflection upon the same subject.

Now, we all know that mails *will* be, and passengers *may* be,

carried by aeroplane in the near future; but, what can we say about cargo? Can Mr. Medway dilate at length, and with clarity, upon this, the most important side of any transportation project?

To be quite frank, while I may be able to hold forth upon this subject with clarity (all contained in the pocket expression Aerial Cargo Transportation = N.B.G.) I cannot increase the length of my discussion, for it seems to me there is little more to be said.

I have obtained some interesting figures from a large dispatching house who desired (but do not still do so) to have an aeroplane delivery service within a 250-mile radius of London.

As a matter of interest, I worked out the cost for them, for ordinary domestic goods such as port wine, silk stockings, Beecham's pills, doormats, and wedding cakes, leaving aside the more bulky packages such as mangles, aviaries, grand pianos, etc.

The average transportation cost by air approximates to 200-250 per cent. on the value of the goods. Out of all the articles named, there is hardly one, except, perhaps, the Beecham's pills, which would be so urgently required as to warrant this excessive cost of transportation.

Moreover, the normal average peace-time transportation cost on the lighter domestic goods, as shown by the firm in question, worked out at 3 per cent. on their value, while for more bulky goods it averaged 6 per cent.

Is there anything that can be brought to the surface from the depths of Medway's unstemmable flow that will help us to solve the Cargo problem?

"Chevron Or."

AERIAL MAIL NOTES.

Spain.

Capt. Herrera, one of the pioneers of the Spanish military air forces, has had a number of interviews with King Alfonso at Madrid on the subject of an aerial postal and passenger service between Spain and United States. The scheme has also been discussed at Cabinet meetings, and it is said that a leading shipping company is willing to finance it.

The plan, it is understood, is to manufacture large airships capable of carrying forty passengers besides the mails. The rate charged for a passenger, if the scheme is carried out, will be $400, and letters will be charged for at the rate of $1 per hundred grams weight (about three and a half ounces). It is estimated the journey would take two days and a half

U.S.A.

The aerial mail to cover the New York-Cleveland-Chicago route was timed to make its maiden trip on Sept. 5th, when a Curtiss and a Standard aeroplanes were to cover the course set down by the Post Office Department.

During the month of August the Aerial Mail Service between Washington, Philadelphia and New York was conducted without a miss or serious delay of any character. This tends to show how the Americans are working to perfect their aerial mail system.

Since the inauguration of the United States Aerial Mail Service the American authorities have realised the great possibilities of this new work, and, aided by a sensible Congress who are prepared to supply machines, they bid fair for going to the top of aerial mail affairs unless other countries wake up.

Austria-Hungary.

It is understood that the aerial mail service between Budapest and Vienna has to come to an end owing to the collapse of the aeroplane at Magyarovar; the two officers were killed and the mail burned. According to the Vienna "Fremdenblatt," the officers whilst conveying mails from Budapest to Vienna were attacked by an eagle, which was killed by the airscrew. One is not very surprised to hear that the aeroplane collapsed under those circumstances.—R.M.

THE ITALIAN TRADE.

A large K. seaplane brought down at Venice quite recently is said to have two motors acting on one propeller shaft. The machine is on view in that city, but illustrations of the craft are not very enlightening.

A new radiator, the Valcerusa, is coming very much to the front, several big engine builders fitting it. Among others the S.P.A. vertical motor on the S.V.A. is called by a Valcerusa.

MACHINE-TOOLS AND AFTER-WAR ORDERS.

The Controller of Machine-Tools has issued a circular to the trade stating that although the demand for machine-tools for urgent war work renders it impossible to make or deliver machines for post-war requirements, it has been decided to permit the manufacturers to take orders for non-war work upon condition that its manufacture is not proceeded with until the sanction of the Department is obtained. It will not be necessary for manufacturers to submit these orders to the Department for approval, but it is possible that the conditions may alter to such an extent that the Department will see its way to grant certificates of priority in respect of certain tools which are urgently required by contractors to enable them to give employment to the maximum number of workpeople immediately after the termination of hostilities. Until such general permission can be given, manufacturers are permitted to manufacture machines only to satisfy definite orders approved by the Department, or to carry out manufacturing programmes which have been approved by it The price regulations in force are to apply to all machine-tool orders, whether for munitions work or not, until such time as circumstances may warrant their withdrawal.

EDUCATING THE IGNORANT.

On Sept. 23rd Handley Page, Ltd., entertained a number of journalists from various papers in Great Britain and the Overseas Dominions, as well as several from neutral countries. The visitors first of all inspected the Handley Page works, or, at any rate, such portion of the works as does not happen to be employed on the latest type machines, and thereafter visited the firm's aerodrome, where a number of journalists, as well as sundry American and Overseas Officers, were taken up for passenger flights by Mr. Clifford Prodger and an R.A.F. pilot.

An unfortunate mistake was made by a Government official, who, acting on the instructions of some clever young gentleman at headquarters, who apparently thinks that education is a mistake, took a party of Overseas journalists to another aerodrome some miles away, so that several of them were done out of their desired flight, owing to pressure of time.

Added interest was lent to the proceedings by the performances of a pilot from a neighbouring aerodrome on a Sopwith Camel, which made an entertaining contrast with the enormous H.Ps.

After leaving the aerodrome the visitors returned to town and were entertained to lunch at the Criterion by Mr. Handley Page. Lord Montagu of Beaulieu, who had journeyed up specially from the country to take the chair, reminded those present that it was ten years this month since Mr. Wilbur Wright arrived in Europe for the first time and showed what flying really was, and he prophesied that as the name of the Wright Bros. had come down to posterity as the pioneers of flying, so the name of Mr. Handley Page would go down as the pioneer of big long-distance commercial aeroplanes.

Mr. Handley Page, in replying, impressed on those present that the success of commercial aviation was already assured, thanks to the progress made in the last four years owing to the pressure of war. He emphasised the fact that there is no need to set about designing commercial aeroplanes because such aeroplanes already exist. Mr. Page explained, in his usual humorous manner, a number of exceedingly interesting photographs shown by magic lantern, the photographs having been taken in the course of the famous trip last year by Squadron-Commander Savory, R.N.A.S., Flight Commander McClellan, R.N.A.S., and Lt. Rawlings, R.N.V.R., from London to Constantinople. Photographs of more recent trips to the Orient could not be shown, as they had only occurred within the last three or four months.

Mr. Joynson-Hicks, M.P., in proposing the toast of the Press, reminded those present of the power which they wielded in influencing public opinion, and besought them to realise the importance of aircraft not only for commercial aviation after the war but for the quick ending of the war, and he said that if we had had sufficient forces of Handley Page's 18 months ago, as we might have had if the problem of production had been tackled with proper energy, the war would probably have been over by now.

Representatives of Australian and New Zealand papers replied on behalf of the Overseas journalists.

One hopes that the demonstration of flying at the aerodrome, and the words of wisdom spoken by Lord Montagu and Messrs. Handley Page and Joynson-Hicks, will assist in some degree in the almost hopeless task of educating the British Press as to the possibilities of aircraft. The Overseas Press, happily, seems to appreciate the situation much more clearly.

A FRANCO-RUSSIAN ALLIANCE.

It is reported that M. Sikorsky, the designer and constructor of the giant biplane bearing his name, is now associated with the French Voisin Co., in the capacity of consulting engineer. It seems likely that he will devote himself to multiple-engined machines, and, considering his early entry into the field of large aeroplanes, the results of his experiments should be of interest.

AN AMERICAN MOVE.

Mr. F. G. Diffin, formerly of the American Department of Aircraft Production, announces that he has resigned his connection with that department, and will in future devote his whole attention to aeronautics. Communications to him should be addressed to 52, Vanderbilt Avenue, New York.

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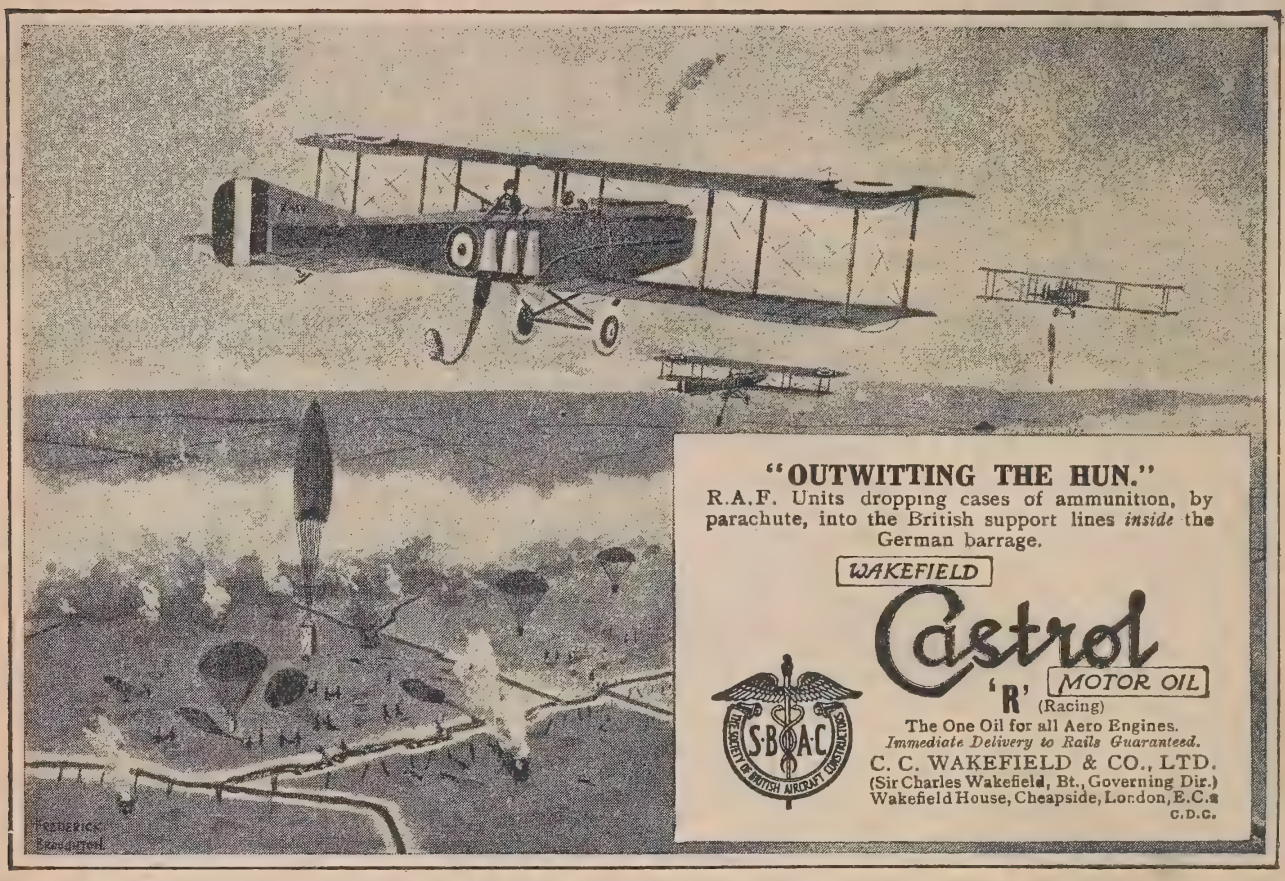
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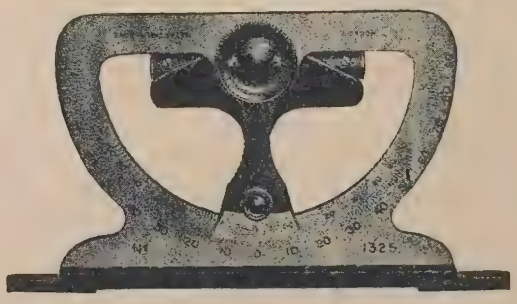


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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Sept. 26th.

COPPER.—Interest is centred round output possibilities, and the outlook is not too satisfactory, although there is not at present a shortage of metal.

The possibility of labour troubles and the recent output returns do not encourage optimism.

Generally speaking, the situation is fairly good, and supplies for national requirements are not difficult to obtain.

Official prices remain unchanged.

TIN.—This market, at present, appears to be very steady. Nevertheless, consumers are not keen on placing orders, evidently expecting a further decline. Although there has recently been a decline of approximately £57, the price is certainly still on the high side.

There appears to be plenty of Tin available for munition work at present, although the absence of statistics makes it difficult to give any figures.

Comparative Prices.

To-day	£342	0	0	per ton.
A week ago	£344	0	0	,,
A month ago	£361	0	0	,,
Highest Price, 1917	£309	0	0	,,
Highest Price, 1916	£205	0	0	,,

LEAD.—Owing to labour difficulties the Lead position is at present unsatisfactory both here and in U.S.A., and the outlook, unfortunately, is not at all promising.

Prices are unaltered.

STEEL.—As indicated in recent issues the question of supplies is very satisfactory, and this is confirmed by recent reports to the effect that the Government propose releasing supplies of commercial Steel for general commercial trade. Supplies of Aircraft Steels are also very satisfactory, and the Sheet Steel position is a little easier, although consumers should look well ahead. There is ample supply of High-Speed Steel, and it is a change to hear of firms canvassing for orders.

Prices remain the same.

TIMBER.—Fair quantities of Aeroplane Timber continue to come forward, and, fortunately, the position shows signs of welcome improvement. Consumers should, however, in the national interest, carefully watch the cutting up and general handling of Timber, with the object of eliminating waste. There are fairly good supplies of Mahogany available at present. The Plywood position continues to improve, and supplies are coming through fairly regularly.

Prices continue unchanged.

FABRIC.—Supplies of Fabric are very good at present, and there does not appear to be any fear of a shortage; this does not, however, apply to Cotton Tapes, which are very difficult to obtain, and consumers should look well ahead.

Official prices are unaltered, although it is rumoured that there is likely to be an advance shortly.

WOOD SCREWS.—It is becoming increasingly difficult to obtain supplies, and there does not appear to be any sign of situation becoming easier, and consumers are advised to watch their orders very carefully.

FOR HEAT TREATMENT.

For case hardening, annealing, tempering, reheating, and other heat treatment requiring an accurately maintained and uniform temperature, the Monometer Heat-Controlled Oven Furnace, it is claimed, is the most efficient proposition on the market. The heating is by gas at town pressure or fuel-oil. Monometer Patent Natural Draught Gas Burners are used for temperatures up to 1000°C. and forced draught with air at 4 to 5 lbs. pressure above 1000°C. Light fuel oils are burnt without carbon deposit or smoke with air at 1 lb. per square inch pressure, but heavy oils require 2 lb. pressure.

These oven furnaces can be supplied in 19 sizes, an explanatory list of which will be supplied on application to Monometer Manufacturing Co., Ltd., Aston, Birmingham.—R.M.

A CHANGE OF NAME.

It should be noted that the name of the British Aeroplane Varnish Co., Ltd., has been changed to "Titanine, Ltd." The registered offices will remain, as previously, at Empire House, 175, Piccadilly, London, W.1.

This seems to be a step in the right direction, as it is usually advantageous for a company's name to be associated with the main product of the firm, as it serves as a useful reminder in these days of overloaded brains.

A TRADE MOVE.

Many of our readers (particularly in the Midlands) will be interested to learn that Mr. Leo. J. Shorter, chief draughtsman since 1914 of the Sunbeam Motor Car Company, Wolverhampton, has joined the well-known organisation of Arrol-Johnston, Ltd., at Dumfries, in a similar capacity at the fine factory there.

Previous to joining the Sunbeam, Mr. Shorter had a number of years' experience with the Humber Company, Coventry; and now, like many other young men of ideas and organising ability, he quite naturally gravitates towards Arrol-Johnston enterprise, where, needless to say, he will have ample scope and receive every encouragement still further to develop his talents.

AN AEROPLANE PORTFOLIO.

Brown Bros., Ltd., are issuing a set of pictures in portfolio form, entitled "Types of Allied Aircraft." This portfolio contains six extremely good pictures 9 ins. by 6½ ins., drawn by Mr. Geoffrey Watson, in crayon style, of a Caproni biplane, S.P.A.D. biplane, "Horace" Farman biplane, S.I.A. biplane, Caproni triplane, and the Caudron twin-engined biplane.

Owing to the high prices charged for producing this portfolio, it has been found necessary to charge sixpence for it, which one considers very reasonable.

The previous series of "British Aircraft" proved extremely popular and was in great demand; readers will, therefore, be advised to apply for this new set as quickly as possible before supplies are ended.

Applications should be made to Department 14, Brown Bros., Ltd., 22 to 34, Great Eastern Street, London, E.C.2, enclosing a sixpenny postal order, or six penny stamps, and marking the envelope "Aircraft Portfolio."

HUMBER EMPLOYEES AT PLAY.

On Saturday last, Sept. 21st, the employees of Humber, Ltd., Coventry, held their second athletic meeting of the year, and, like the first meeting, it was a great success, despite the weather. The racing was of high class; many of the leading flat runners of the country took part, as well as several first-class cyclists. The sports were promoted by the Humber Recreation Society, and reflected great credit on the acting secretaries, Mr. W. Hannay and Mr. W. A. Ireland.

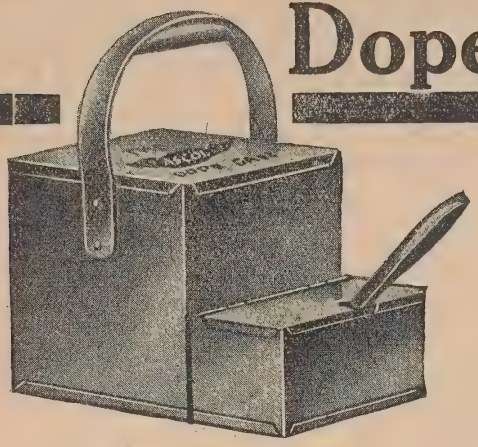
NON-FERROUS METAL INDUSTRY ACT.

The Committee appointed by the Board of Trade to consider applications and hear applicants for licences under the Non-Ferrous Metal Industry Act is meeting regularly and frequently during the recess. The Committee has now disposed of some 900 out of the total of 1,400 applications received, and the consideration of the remainder is being rapidly proceeded with.—Board of Trade, Sept. 21st.

A CONVICTION.

At Middlesex Sessions Thomas Hicks, 35, engineer, was sentenced to 14 months' imprisonment, and was ordered to pay the costs of the prosecution, for receiving a vice, a jack, and a quantity of insulating wire, the property of the Grahame-White Aviation Company, knowing them to have been stolen. The defendant, who had been employed by the prosecutors for 2½ years, had access to a number of tools, and it was alleged that the articles in question were found at a garage which he rented as a motor-cycle garage. A detective officer stated that Hicks had been under his observation since August last year. He had been advertising marine motor engines for sale, and complaints had been made by persons who had bought the machinery of its being obsolete and useless. In 1916 he was convicted of bigamy, and was bound over on his undertaking to rejoin the Army, from which he had been discharged, or to take up work of national importance. He then took work as a munition maker.

Dope Room Equipment



(REGISTERED DESIGN.)

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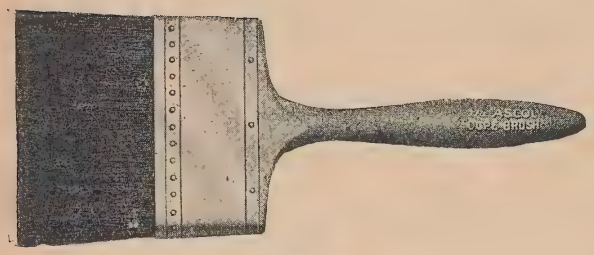
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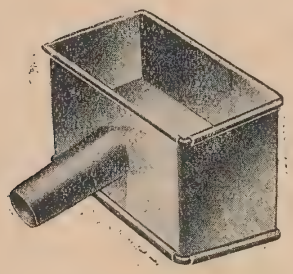
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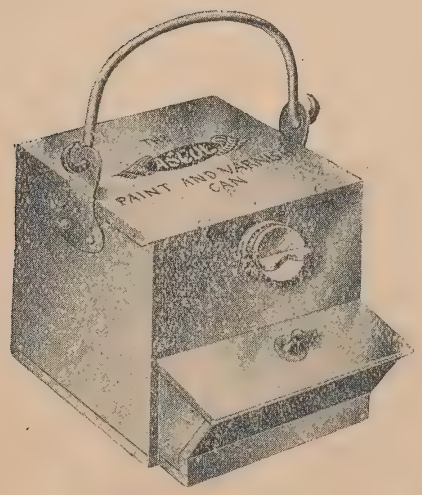


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IS DESIGNED FOR THE EXCLUSIVE USE WITH COLOURED PAINTS OR DOPE WASH; CAN BE SUPPLIED PAINTED WITH DIFFERENT COLOURED BANDS FOR USE WITH RED, WHITE, OR BLUE PAINT.

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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

AIRCRAFT FINANCE

CURRENT TOPICS.

Another Helping of Dope.

The "Dope" affair seems to be sinking into sweet and unmerited oblivion. What a pity if it were allowed to do so. The nation is entitled to know, after what has been said, all that there is to be known about the genesis and elaboration of this grandiose scheme conceived by the Officials and generously sponsored by the Government. True the Investigation Committee, euphemistically described as a tribunal, is to find out all there is to be found out about the "affair" *if it can*. But how can it aspire to such an ambitious height without the requisite power to subpœna witnesses, or call for books and papers, or even employ experts?

Bricks Without Straw.

Individually the Committee are men of experience and excellent qualifications, endowed with sound judgment and profound wisdom, but, in default of the powers specified, one suspects that the Committee, in spite of the excellence of its individuality, cannot prove any more useful than an aeroplane without engines. The simile may seem harsh, but it is appropriate. Conceivably, of course, because of its social, political and commercial weight, the Committee's findings may lead to the appointment of a supplementary investigation. At the same time it may not. One can only hope for the best.

At the Public Expense?

Owing to the need for cellulose-acetate, it is alleged that the British Cellulose Co. decided to manufacture that commodity in its synthetic form. The experiments were satisfactory; immediately a big plant was laid down for its production from aldehyde. Supplementary plant had to be erected also, including an electric plant with a capacity of 86,000 kilowatts and liquid air being necessary machinery for that purpose was provided.

Define the Object.

Before the experiments had proved it commercially practicable to produce the synthetic cellulose-acetate, it is alleged that several huge buildings and a lot of fine and costly machinery had been laid down at an expense of something like three quarters of a million. Evidently the Government provided the necessary capital. Anyway, the productive capacity of the new plant is said to be equal to the consumption of all the chemical works in the Kingdom. It sounds a very ambitious programme. To some it may appear sound to work on large lines, but what the average man wants to know is this: Was the company sponsored and financed by the Government with the object of tiding over the shortage of "dope" during the war, or for the purpose of establishing a huge chemical factory which would fight the commercial battle on the restoration of peace?

Interest Must be Kept Alive.

It was dope that was wanted and wanted urgently. The company was to cover the shortage of that essential commodity at once, according to the general understanding of the case. It received public money to enable it to do so, and it was not so much a question of cost, but rather the production in adequate quantities of an efficient and reliable dope without delay. Having regard to what has already been published on the subject, it now remains for the Investigation Committee to prove, as far as their limited powers of inquiry permit, that the company fulfilled this national function. Interest in the question must not, therefore, be allowed to fade.

Aircraft Securities Well Held.

With the bacilli of industrial unrest rather virulent, the Stock Exchange has been in a chastened mood, wondering what will be the outcome of it all. This negatived the excellent war news. But, although restrained, markets are not by any means weakly inclined. With a few exceptions aircraft and kindred securities keep wonderfully strong, being inspired by the knowledge that profits are still being made on an excellent scale.

Rovers' Excellent Profits.

In anticipation of a big bonus arising out of the capitalisation of reserve funds, Rover shares were prominently active. But the published results falsified such hopes. At the same time, the profits show up extraordinary well. For the eleven months—the financial year is being changed—the gross trading profit amounts to £172,500, whereas for the whole of the previous year they were £143,150, but as it is not clear how much, if anything at all, is provided in either case for Excess Profit Duty, one cannot clearly anatomise the real position.

Profit-Sharing.

At £99,700 the eleven months net profit goes against £89,700 for the preceding twelve months. Of particular interest is the provision of £20,000 as a bonus to workpeople and the staff. A similar amount was distributed out of the profits of the preceding year. This is an excellent idea and should commend itself to everyone as an example of profit-sharing between employers and employees. It may seem an extraordinary large amount, but it is really not so when compared with the 25 per cent. dividend and bonus involving £50,000.

Big Reserve Funds.

Liberal provision is made for various purposes. Plant reserve account receives £5,000, against £10,000, making it £18,967; tools reserve £5,000, against £10,000, making it £15,000. War contingencies £19,835, against £6,400, bringing the total up to £60,000, while £1,000 is added to Employees' War Dependents Fund, making it £3,100, while £45,384 is carried forward or nearly £5,500 more than was brought in. The several reserve funds combined considerably exceed the capital of £200,000. The dividend of 10 per cent., and the bonus of 15 per cent. are paid free of tax, and the yield on the shares at £4 would be 6¼ per cent net, equal to about 8 per cent. subject to tax.

French Delco Company.

According to a French financial contemporary the Peugeot, the Berliet, the Clement-Bayard, and other motor companies have come to an arrangement whereby the Continsonza Company is to manufacture the American "Delco" dynamo for the benefit of the French industry. For this purpose the French Delco Company has been formed with a capital of 400,000 francs. By this move the industry will be rendered independent of the Bosch magneto which dominated the market before the war.

Blow for the Bosh.

A great deal seems to be expected of the arrangement, including an enhanced production at a lower average cost. It seems to be another serious blow at the Hun Bosch Company, whose position, when the war is over, promises to be very interesting in the world. Other financial details of the new venture do not appear.

Ariés Motor

The French Ariés Motor Co. made a gross profit of 1,908,434 francs last year, the net profit being 985,101 francs. There is to be a dividend of 100 francs per share, and 747,601 francs is placed to the reserve. It is proposed to repay part of the capital. This operation will take place coincidently with the dividend payment, and will be at the rate of 475 francs per 500 francs of capital. For each share repaid the shareholders are to receive five new shares.

Morane Saulnier.

The capital reimbursement scheme of the Morane Saulnier Aeroplane Co. is now being completed by the payment of 50 francs per share. Henceforth the capital will be represented by 10,000 shares entitled to 75 per cent. of the profits, the remainder being divisible among 2,500 part shares.

Mond Nickel Prosperity.

A profit of £531,840 was made by the Mond Nickel Co. during the financial year to April 30th. This compares with £327,250 for the preceding year, and £322,600 for 1915-1916. But there is to be no increase in the 20 per cent. Ordinary dividend. Instead, no less a sum than £250,000 compared with £50,000 is transferred to reserve, and a surplus of £118,252 is carried forward against £111,600 brought in. The reserve is thus brought up to a total of £450,000, whereas the capital is £1,880,000, of which £900,000 is in Ordinary shares. This looks very sound.

MORTGAGES, CHARGES AND SATISFACTIONS.

Burton Aircraft and Manufacturing Co., Ltd.—Satisfaction in full on (date unstated), 1918, of debentures dated Nov., 1916, and Jan., 1917, securing £3,000. (Notice filed Sept. 19th.)



Where Flying Men are fitted out.

Service Dress in Khaki

is still allowed. In matters sartorial the R.A.F. is in a transitional state, and opinions are divided on the merits of the new blue. There may be further changes before the final decision. Meantime it is well to be on the safe side by adhering to the old pattern. For one thing there need be no waiting, as supplies are ample.



Dunhill kit bears witness in fabric, fit and fastenings to the unique experience and skill of the house of its origin. Its reputation among the men who man Britain's air-fleet is established.

The prices run as follows :—
Khaki Service Tunic (badges extra)
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3½ Gns.
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Cap and Badge, with one pair of Rank Bars.
£1 17 6

We can supply the new pattern blue at special prices.

Call in, if you can, at our well-known "base" in Conduit Street and inspect the full kit. Or drop a line for patterns and full details, which will be sent gladly on request.

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(Continued from page 1191.)

of control, and force the remaining two to retire. He then flew back to his aerodrome, where, owing to his rudder being out of action, he crashed, fracturing both legs and an arm. In all, he has carried out 66 bombing raids, invariably showing fine courage and initiative.

Lt. WALTER ALBERT VEULETT (Sea Patrol).
Was engaged in a long-distance bombing raid on an enemy aircraft station, under very difficult circumstances, and carried out a successful attack from a low height in the face of severe enemy fire.

Capt. JOHN WILLIAM BOLDERO GRIGSON.
Lt. OSWALD ROBERT GAYFORD (Obsr.) (Sea Patrol)
These two officers have flown together for a period of twelve months, during which time they participated in a number of bombing raids, carried out a large number of valuable reconnaissance patrols and escort flights in all weathers, by day and night, during the performance of which duties they have brought down hostile aircraft on several occasions. No task is too difficult for these officers

Capt. (temp Maj.) EGBERT CADBURY, D.S.C. (Pilot).

Lt. (temp Capt.) ROBERT LECKIE, D.S.O., D.S.C. (Obsr.).

Lt RALPH EDMUND KEYS (Pilot) (Sea Patrol).
These officers attacked and destroyed a large enemy airship which recently attempted a raid on the North-East Coast, and also succeeded in damaging a second airship. The services rendered on this occasion were of the greatest value, and the personal risk was very considerable for aeroplanes a long way out from land.

WAR OFFICE, Sept. 16th.

His Majesty the King has been graciously pleased to approve of the following Awards to the undermentioned Officers in recognition of their gallantry and devotion to duty in the Field :—

AWARDED A BAR TO THE MILITARY CROSS.

CANADIAN FORCE.

Lt. WILLIAM JAMES ARTHUR DUNCAN, M.C., C.F.T.D. Sec., R.A.F.
For conspicuous gallantry and devotion to duty. This officer sighted fifteen enemy scouts attacking eight of ours and immediately joined in, destroying one enemy aeroplane, which fell with a wing off. He then attacked and drove down three other machines, maintaining the fight until the eight had got back to their lines. He has also, with another officer, destroyed an Albatros scout, which he followed down to a height of 200 feet, in spite of heavy machine-gun fire from the ground. (M.C. gazetted July 26th, 1918.)

AWARDED THE MILITARY CROSS.

Temp. Lt. CHARLES HENRY ARNISON, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. He has destroyed four enemy aircraft and driven down four others completely out of control. He has always shown the greatest skill, keenness and gallantry, and has been largely instrumental in the fine achievements of his squadron.

Temp. Capt. HILLIARD BROOKE BELL, R.A.F.
For conspicuous gallantry and devotion to duty. He destroyed five enemy machines and drove down one out of control. He is a very fine patrol leader and an excellent officer. His work is thoroughly good, all round.

Temp. Sec. Lt. RONALD TURNBULL MARK, M.C., Gen. List and R.A.F.
For conspicuous gallantry and devotion to duty. This officer and another pilot were escorting a formation of machines engaged on bombing a village, when seven enemy scouts attacked the bombers. They both attacked these scouts, but at the outset the other pilot's machine was set on fire, and Sec. Lt. Mark's right-hand top plane broke. During the fight that ensued each came to the rescue of the other. Sec. Lt. Mark first caused the other pilot's pursuer to break off his attack, and then the other pilot shot down the scout attacking Sec. Lt. Mark. The action of both these officers, in practically unmanœuvrable machines, in coming to the rescue of each other in turn showed courage and self-sacrifice of a very high order. (M.C. gazetted June 22nd, 1918.)

Lt. GERALD ALFRED BIRKS, R.A.F.
For conspicuous gallantry and devotion to duty in destroying six enemy aeroplanes, two of which fell on our side of the lines.

Temp. Sec. Lt. (temp. Capt.) ORLANDS CLIVE BRIDGEMAN, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. The patrol he was leading was attacked by twenty or thirty enemy aeroplanes, of which he destroyed two himself, and by skilful manœuvring enabled two others to be "crashed" by officers of his patrol. His tactics and gallantry undoubtedly prevented what might have been a severe reverse to his patrol. On many occasions his work in attacking troops and other ground targets from low altitudes has been excellent, and his example and skilful leadership have been of great value to his squadron.

Temp. Lt. GEORGE WILLIAM BULMER, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty as a fighting pilot. In recent operations he destroyed seven enemy machines and an observation balloon. By his tenacity and zeal he set a magnificent example in his squadron.

Lt. FREDERICK WILLIAM BURDICK, A. Cyc. Corps, attd. R.A.F.
For conspicuous gallantry and devotion to duty. This officer has carried out several contact patrols and brought in accurate information, and has bombed and machine-gunned enemy troops from a low altitude, under bad weather conditions. He has also carried out many successful flights, and on one occasion landed his machine after a direct hit from a shell

Temp. Sec. Lt. (temp. Capt.) PHILIP SCOTT BURGE, M.M., Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty. This officer is a brilliant fighting pilot, and has destroyed six enemy aeroplanes. His dash and determination when engaged in combat with the enemy, often numerically superior, have set a fine example to the remainder of his formation.

Temp. Sec. Lt. (temp. Capt.) BASIL EVERARD CATCHPOLE, Gen. List and R.A.F.
For conspicuous gallantry and devotion to duty. This officer has been observing for artillery during the last eight months, often flying at low altitudes over the enemy lines under heavy anti-aircraft and machine-gun fire. The following is three consecutive days' work :— (1) While on patrol, flying at 400 feet, he fired 900 rounds under intense anti-aircraft and machine-gun fire; (2) carried out two very successful shoots, observing on hostile batteries, dropped four bombs, and saw several large explosions, also fired 800 rounds into farms, orchards and trenches; (3) left the ground in the dark on artillery patrol and located accurately 20 hostile batteries. In the afternoon he did four good shoots in two flights, causing explosions in every case. He flew for eight hours this day. He has always set a splendid example in his squadron.

Temp. Capt. LEWIS ISAAC COLLINS, York R. and R.A.F.
For conspicuous gallantry and devotion to duty. He has carried out twelve successful bombing raids, fifteen low bombing and reconnaissance flights, and ten successful photographic flights. He has carried out many low flying, harassing and bombing patrols of great value. In addition he has destroyed two enemy machines, on one occasion being attacked by three of the enemy

Lt. HAROLD ROSS EYCOTT-MARTIN, R.E., R.A.F.
Lt. conspicuous gallantry and devotion to duty. In a patrol with two other machines he attacked nineteen of the enemy. Of the six enemy aircraft destroyed on this occasion he destroyed two. On two other occasions he destroyed an enemy machine.

Sec. Lt. CHARLES GEORGE CASS, Lond. R., attd. R.A.F.
For conspicuous gallantry and devotion to duty. During many engagements, generally against heavy odds, he destroyed five enemy aircraft. He showed great ability and an entire disregard for personal danger.

Temp. Capt. GEORGE EVERARD GIBBONS, Gen. List and R.A.F.
For conspicuous gallantry and devotion to duty. He has lately destroyed three enemy machines and driven down others out of control. He has always shown great gallantry and keenness, and has commanded his flight with distinction, performing invaluable services in training young officers in the squadron.

Temp. Lt. HERBERT RUSKA GOULD, Gen. List and R.A.F.
For conspicuous gallantry and devotion to duty. He has carried out 24 successful bombing raids, several of which he has led, and 20 low reconnaissance and bombing flights, as well as many low-flying, harassing and bombing patrols, during which many direct hits have been obtained and severe casualties inflicted. He has destroyed three enemy machines and has shown a very high spirit of zeal throughout.

Temp. Lt. CHARLES PHILIP HARRISON, R.E., attd. R.A.F.
For conspicuous gallantry and devotion to duty. This officer was acting as observer when his pilot was severely wounded. He opened fire and shot down the enemy aeroplane, which fell in flames. He then took control of his own machine, which was very badly damaged, his pilot being "hors de combat," and notwithstanding complete inexperience in piloting a machine he managed to bring it safely back to an aerodrome. His skill and courage undoubtedly saved his pilot's life, and prevented the machine from falling into the hands of the enemy.

Sec. Lt. HORACE HAYCOCK, R.A.F., Spec. Res.
For conspicuous gallantry and devotion to duty. A hostile aeroplane, escorted by four scouts, was reported to be registering an enemy battery, and as no fighting machines were available to drive off the enemy he went up in an artillery machine and sent down a call to our artillery. No reply being received, he descended to a low height and, in spite of the hostile aeroplanes above him, he attacked the enemy battery, which he silenced with machine-gun fire.

Temp. Sec. Lt. HERBERT GEORGE HEGARTY, R.A.F.
For conspicuous gallantry and devotion to duty on offensive patrols. During recent operations he destroyed four enemy machines and drove down two. He is a bold and fearless pilot, and has done splendid work.

Sec. Lt. ERNEST FORD HOWARD, R.A. and R.A.F.
For conspicuous gallantry and devotion to duty. This officer has taken part in fifty-two night bombing raids, showing at all times the greatest skill and perseverance in finding his objective. On one occasion in particular, after having successfully bombed a large ammunition dump which was set on fire and blown up, he proceeded to drop bombs on a town which held large numbers of the enemy, also firing from a low altitude with his machine gun on the roads leading to it. Returning to his squadron he obtained more bombs and ammunition, and, with the same observer, proceeded to drop bombs on a train behind the enemy's lines. On many occasions his machine was badly damaged by enemy fire from the ground. He has set a fine example of devotion to duty and entire disregard of danger to the other members of the squadron

Lt. CEDRIC ERNEST HOWELL, R.A.F., Spec. Res.
For conspicuous gallantry and devotion to duty. He bombed an electrical power-house with great skill, obtaining three direct hits from 100 feet. With two other machines he carried out a most dashing attack on a formation of twelve enemy aeroplanes. Although badly hampered by frequent jams in both of his machine guns, he destroyed three and drove down one out of control. He is a most successful and gallant patrol leader, and has destroyed six enemy aeroplanes and shot down one out of control.

Temp. Lt. HAROLD BYRN HUDSON, R.A.F.
For conspicuous gallantry and devotion to duty in destroying four enemy aeroplanes and shooting down two enemy kite balloons in flames.

Temp. Capt. FRANK HYDE, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty. He carried out many successful shoots and did valuable reconnaissance work, frequently under heavy anti-aircraft and machine-gun fire and adverse weather conditions. As a flight commander his work was splendid, and he set an example of cheerfulness and efficiency to all officers in the squadron.

Lt. (temp. Capt.) MONTAGUE RIGHTON NEVILL JENNINGS, R.A.F., Spec. Res.
For conspicuous gallantry and devotion to duty. He has carried out many low-flying patrols and reconnaissances, engaging troops, transport, etc., with machine-gun fire. On one occasion he engaged and silenced a machine-gun battery; on other occasions he personally completely destroyed three enemy machines.

Temp. Lt. JAMES IRA THOMAS JONES, M.M., R.A.F.
For conspicuous gallantry and devotion to duty. This officer, one of an offensive patrol, engaged and shot down in flames a two-seater, which fell to earth. Ten days later, on offensive patrol, he shot down a Hannover two-seater, which crashed. The next day, when patrolling he pursued, overtook and shot down an Albatros two-seater. During the same flight he met a Halberstadt two-seater and killed the observer, who either jumped or fell overboard, but had to break off as his ammunition was finished. The next day he shot a balloon down in flames. Three days later he got a good burst with both guns on a Pfalz scout, both wings coming off. He has driven two others down out of control.

Lt. ARTHUR STUART KEEP, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty on long-distance bombing raids. He showed great skill and determination while raiding enemy towns. One day, with his oil-feed pipe broken, he reached his objective, and disposed of an enemy machine on the way back. His work was splendid.

Temp. Lt. Charles Ley King, R.A.F.
For conspicuous gallantry and devotion to duty when working with artillery in carrying out thirteen successful shoots, by which numerous enemy gun pits were destroyed and fires and explosions caused. He also carried out two very good long reconnaissances, taking excellent photographs and obtaining valuable information.

Temp. Lt. Dennis Latimer, R.A.F.
For conspicuous gallantry and devotion to duty on offensive patrol. He and his observer in four days' fighting destroyed seven enemy machines and drove down three. They did magnificent service.

Temp. Sec. Lt. Alfred Alexander Leitch, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty while on fighting patrols. During recent operations he displayed great courage and determination in attacking superior forces of enemy aircraft, and in engaging with machine-gun fire enemy troops and transport on the ground. He did splendid work, and set a most inspiriting example.

Temp. Sec. Lt. Bryant Lutellus Lindley, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty during recent operations. He carried out several very successful long-distance reconnaissances and bomb raids under adverse weather conditions, and during low-bombing and machine-gun actions he did most brilliant work. Throughout he showed great gallantry and skill.

Temp. Capt. Cyril Nelson Lowe, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. This officer and another pilot were escorting a formation of machines engaged on a bombing raid when seven enemy scouts attacked the bombers. They both attacked these scouts, but at the outset this officer's machine was set on fire, and the other pilot's right hand top plane broke. During the fight that ensued each came to the rescue of the other. The other pilot first caused Capt. Lowe's pursuer to break off his attack, and then Capt. Lowe shot down the scout attacking his comrade. The action of both these officers, in practically unmanœuvrable machines, in coming to the rescue of each other in turn, showed courage and self-sacrifice of a very high order.

Lt. (temp. Capt.) Thomas Clelland Lowe, R.E. and R.A.F.
For conspicuous gallantry and devotion to duty in carrying out numerous successful reconnaissances and taking a large number of successful photographs, on several occasions driving off enemy aircraft. He has repeatedly carried out long reconnaissances, showing great determination in overcoming difficulties and completing his duty. When attacked by seven enemy aeroplanes he and his observer engaged them and drove one down out of control.

Lt. Leslie John Mann, A.S.C., attd. R.A.F.
For conspicuous gallantry and devotion to duty in skilfully bombing enemy munition and supply depôts, in spite of heavy shell and machine-gun fire, which had seriously damaged his plane. On many occasions he has set a fine example of courage, especially on one, when he endeavoured to assist the occupants of an aeroplane which had been brought down in the enemy's lines.

Lt. (temp. Capt.) Frederick William Mathias, R.A.F.
For conspicuous gallantry and devotion to duty. He carried out several successful shoots, doing considerable damage; he took a large number of successful photographs, and completed several long-reconnaissances, obtaining valuable information.

Temp. Sec. Lt. Frederick McChesney, R.A.F.
For conspicuous gallantry and devotion to duty. He succeeded in getting valuable photographs of the enemy system, his machine being damaged by machine-gun fire from the trenches. On six occasions he carried out low reconnaissance flights, bringing back valuable information, though his machine was badly damaged by machine-gun fire from the ground.

Lt. Ian Donald Roy McDonald, R.A.F.
For conspicuous gallntry and devotion to duty. With seven scouts he attacked eighteen enemy machines, of which three were destroyed and one driven down completely out of control. When driven down to within 200 feet of the ground by two enemy machines owing to a choked engine, he turned on them and drove one down. He has in all destroyed eleven enemy aircraft and carried out valuable work in attacking enemy troops on the ground.

Lt. Alan Fleming McGlashan, R.A.F.
For conspicuous gallantry and devotion to duty on contact patrol, reconnaissance, day and night bombing, and in aerial fighting, especially in dropping eighteen bombs on a village, from only 900 feet owing to bad weather, six days' excellent photographic work during heavy fighting, frequent contact patrols resulting in good information, and also firing many rounds at the infantry on the ground from low altitude. His work and example for ten months have been splendid.

Temp. Sec. Lt. Henry Michael Moody, Gen. List and R.F.C.
For conspicuous gallantry and devotion to duty in leading patrols. He has destroyed four enemy aircraft and shot down three out of control. He has further carried out very successfully a number of low-flying patrols, photographic reconnaissances, and escorts, and has on all occasions shown a very fine spirit of dash and determination.

Capt. Ian Patrick Robert Napier, Arg. and Suthd. Highrs. and R.A.F.
For conspicuous gallantry and devotion to duty. This officer has carried out many reconnaissances, and flying at low altitudes has engaged massed enemy troops with bombs and machine-gun fire, inflicting heavy casualties. He has brought down seven enemy machines.

Temp. Capt. Keneth Russel Napier, R.A.F.
For conspicuous gallantry and devotion to duty during recent operations. He carried out several successful reconnaissances under heavy machine-gun fire from the ground, dropping bombs on troops and machine gunning them, while attacked himself by enemy aircraft. Under very trying weather conditions he brought back most valuable information. He did very fine work.

Sec. Lt. Kenneth Willie Payne, R.A.F., Spec. Res.
For conspicuous gallantry and devotion to duty. This officer has shown great skill in carrying out night bombing raids on back areas under adverse weather conditions. On one occasion observing a train in motion fifty miles behind the enemy lines, he descended to within about 800 feet of the ground and dropped a bomb, obtaining a direct hit; he then dropped three bombs on a brilliantly-lighted building with good effect. After this he returned to the train, which his observer attacked with machine-gun fire. On another occasion, when on a bombing raid, his machine caught fire, but with great coolness he brought it safely to earth. He has taken part in over thirty raids, always showing great determination in reaching his objectives.

Temp. Sec. Lt. Ernest Frederic Peacock, Gen. List, R.A.F.
For conspicuous gallantry and devotion to duty while on fighting patrols. He showed great determination and courage in attacking superior numbers of enemy aircraft, and carried out fine work in engaging enemy troops and transport on the ground with machine-gun fire.

Temp. Sec. Lt. George Raby Riley, R.A.F.
For conspicuous gallantry and devotion to duty. He obtained four direct hits on a long line of enemy transport, and afterwards caused havoc among them with his machine-gun. Several times he attacked troops and transport from low altitudes; also he brought down one enemy machine and drove another out of control.

Sec. Lt. Hugh William Lumsden Saunders, M.M., Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. During recent operations he destroyed five enemy machines and shot down four out of control. He showed great courage and skill in engaging enemy aircraft, and did splendid service.

Lt. (temp. Capt.) Stanley Stanger, R.A.F.
For conspicuous gallantry and devotion to duty in destroying six enemy aeroplanes. He did splendid service.

Temp. Sec. Lt. Charles Anthony Sundy, 3 Wales Bord., and R.A.F.
For conspicuous gallantry and devotion to duty during recent operations. When attacked by seven enemy aircraft, he opened fire and sent one to the ground. He showed great brilliance at long-distance photography and reconnaissance, and located a number of new hostile aerodromes and brought back much valuable information. He carried out his work with remarkable coolness and determination.

Lt. Francis Stanley Symondson, Yeo. and R.A.F.
For conspicuous gallantry and devotion to duty. In two months he destroyed five enemy machines and one enemy kite balloon.

Temp. Lt. Samuel Frederick Henry Thompson, Gen. List, R.A.F.
For conspicuous gallantry and devotion to duty as a fighting pilot. During recent operations he destroyed five enemy machines. He showed great courage and skill, and by his keenness and dash set a fine example to all.

Temp. Lt. William MacKenzie Thomson, R.A.F.
For conspicuous gallantry and devotion to duty on offensive patrols. In five days he destroyed as many enemy machines. He showed fine determination to close with the enemy, and set a splendid example of enterprise and gallantry.

Sec. Lt. (temp. Capt.) John Tod, R.A.F.
For conspicuous gallantry and devotion to duty. During recent operations he destroyed three enemy aircraft, forced one to land in our lines, and drove four down out of control. He did very fine work.

Temp. Sec. Lt. Walter Alexander Tyrrell, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. On one day this officer attacked two enemy triplanes, destroying one and driving down the other out of control. After this he was attacked by two other machines, one of which he forced to land, taking the occupants prisoners. On various other occasions he has destroyed or driven down out of control enemy machines.

Sec. Lt. John Howard Umney, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty. During recent operations he destroyed five enemy machines. By his untiring energy and keenness, both in the air and on the ground, he set a splendid example to other observers in the squadron, and greatly helped his pilot in successful encounters.

Temp. Sec. Lt. Henry Edward Walker, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty during many flights and encounters in the air when, often single-handed, he was most successful in bringing down enemy machines, and invariably displayed the utmost skill and resolution. He has been engaged in fourteen combats, which have either been decisive or have resulted in enemy aircraft being driven down to a low height, and he has on occasions gone up as many as five times in one day.

Temp. Sec. Lt. Stanley Harry Wallage, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty during recent operations. He personally destroyed seven enemy machines. He showed a fine spirit of dash and tenacity, and his skill and success as a fighting pilot was a fine example to others in his squadron.

Temp. Capt. Albert Gregory Waller, Gen. List, and R.A.F.
For conspicuous gallantry and devotion to duty. He has led fifteen successful bombing raids twenty-two low bombing and reconnaissance flights and eight successful photographic flights. In addition he has destroyed five enemy machines. As a flight commander he has shown initiative and enterprise both in the air and on the ground, and the excellent work done by the flight under his command is entirely due to his fine example and untiring energy.

Lt. Hugh Sidney Porter Walmsley, N. Lan. R., and R.A.F.
For conspicuous gallantry and devotion to duty on long-distance bomb raids. In four of these he acted as leader, and displayed great skill and tenacity in getting the better of the enemy. He has carried out twelve raids into the enemy's country, and his work throughout has been consistently of a high order.

Lt. (temp. Capt.) Frederick Williams, R.A.F. Spec. Res.
For conspicuous gallantry and devotion to duty during recent operations. He took part in a number of long-distance raids and photographic reconnaissances, showing great gallantry and skill under difficult conditions. He destroyed three enemy aircraft and drove down two out of control. Throughout he showed great keenness and determination.

Temp. Sec. Lt. Thomas Frederic Williams, Gen. List and R.F.C.
For conspicuous gallantry and devotion to duty. He destroyed four enemy aircraft and drove down one. Also, in conjunction with another officer, he was instrumental in forcing an enemy machine to surrender and land.

Temp. Sec. Lt. Thomas Melling Williams, Gen. List, attd. R.A.F.
For conspicuous gallantry and devotion to duty. During recent operations he destroyed three enemy aircraft and drove down two out of control. He showed great skill and courage in his attacks, and set a fine example to all.

Lt. (temp. Capt.) Percy Wilson, R.A.F.
For conspicuous gallantry and devotion to duty in destroying six enemy aeroplanes and driving down three more out of control. He also destroyed an enemy balloon, which fell in flames.

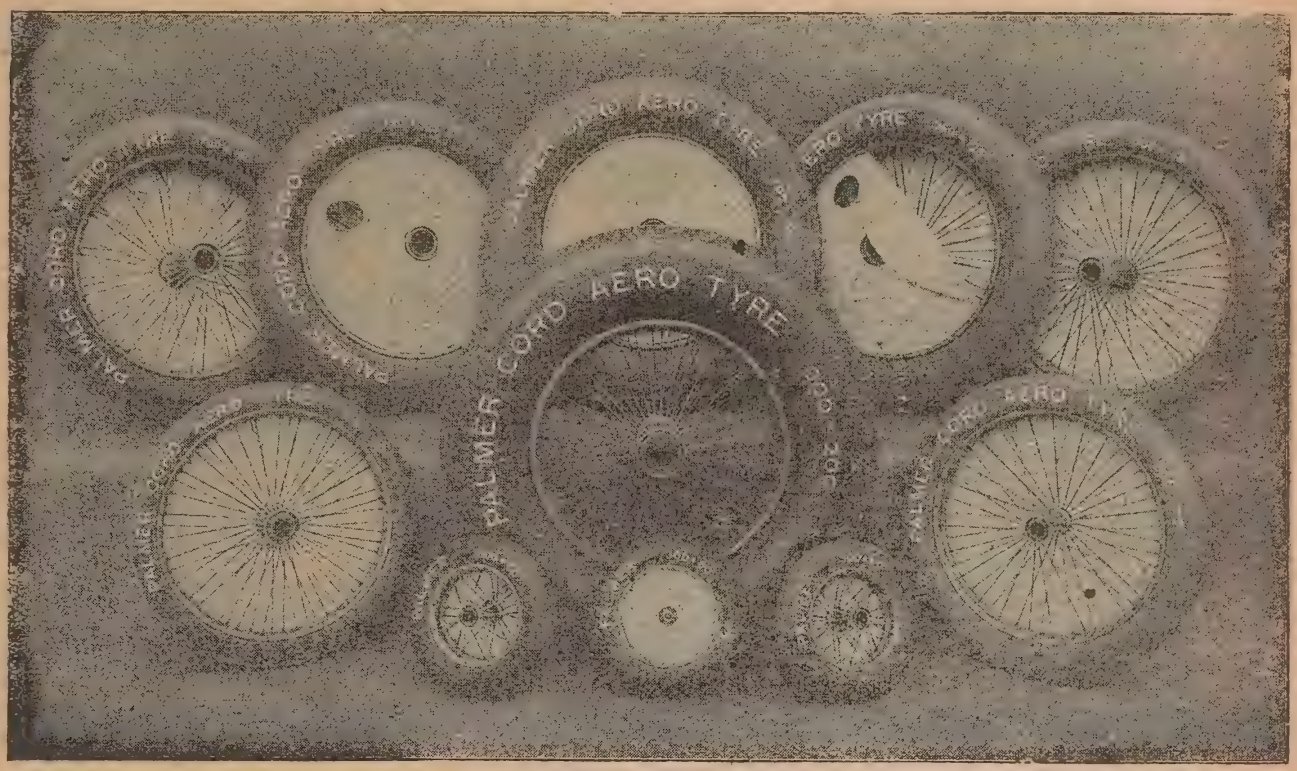
Lt. Hubert Lee Holland, Cyc. Co., secd. to R.A.F.
For conspicuous gallantry and devotion to duty when working with artillery in carrying out six successful shoots whereby many enemy gun pits were destroyed and explosions caused. In one case he descended to 100 feet and found all pits totally destroyed. He carried out a good low reconnaissance of two suspected hostile batteries and also obtained other very useful information.

Lt. Clifford McEwen, Infy., secd. to R.A.F.
For conspicuous gallantry and devotion to duty in destroying six enemy aeroplanes. A most gallant pilot and patrol leader.

Lt. Edward Launce O'Leary, Can. Field Arty., attd. R.A.F.
For conspicuous gallantry and devotion to duty. When on bombing

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Tyre Sizes	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Sizes	Wheel No.	Hub Length	Hub Bore	Track Line	Tyre Sizes	Wheel No.	Hub Length	Hub Bore	Track Line
		m/m	m m	m m			m/m	m/m	m m			m m	m/m	m m
300×60	16	111.12	25.4	Central	700×100	33	150.	38.09	Central	800×150	†41	185.	55.	Central
,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/50
450×60	30	89.	31.75	Central	,,	92	185.	55.	135 50	,,	85	185.	55.	Central
575×62	21	160.	28.	Central	,,	95	185.	55.	Central	,,	106	185.	47.62	135/50
,,	34	150.	31.75	104 46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Central
,,	111	150.	38.09	104 46	,,	99	178.	38.89	132 46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132 46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
,,	79	178.	44.45	Central	650×125	119	178.	55.	132/46	,,	201	185.	60.32	125 60
,,	100	178.	38.09	132 46	750×125	33	150.	38.09	Central	900×200	107	185.	55.	Central
,,	101	178.	31.75	132 46	,,	77	178.	44.45	132 46	,,	108	185.	55.	125 60
600×75	21	160.	28.	Central	,,	92	185.	55.	135 50	,,	120	185.	66.67	125 60
,,	34	150.	31.75	104 46	,,	95	185.	55	Central	,,	202	185.	60 32	Central
,,	111	150.	38.09	104 46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125 60
700×75	78	178.	44.45	132 46	,,	99	178.	38.89	132/46	1100×200	52	185.	55.	116/69
,,	79	178.	44.45	Central	,,	112	150.	40.	Central	,,	117	185.	55.	Central
,,	100	178.	38.09	132/46	800×150	36	185.	55.	135 50	,,	203	185.	60,32	116 69
,,	101	178.	31.75	132/46	,,	40	185.	60.32	135 50	,,	204	185.	60.32	Central

† *Wheels Nos* 36, 40, 41, *and* 205 *are of stronger type than the other wheels for* 800 x 150 *tyres.*

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duty, he successfully drove off three enemy aeroplanes, and when on escort duty, and attacked by six enemy aeroplanes, he brought down one out of control. He made twelve successful reconnaissance flights during a fortnight of bad weather conditions at low altitude, his machine being hit in many places.

AUSTRALIAN IMPERIAL FORCE.

Capt. ERNEST JAMES JONES, D.F.C., F.C.

For conspicuous gallantry and devotion to duty. While co-operating with artillery, he was attacked by three triplanes. He was wounded and the controls of his machine damaged. He out-manœuvred the enemy, reported his observation to his battery by wireless, and returned to his aerodrome. On landing, owing to the damage to his machine, he crashed, but although much weakened by loss of blood, extricated his observer from the wreckage. On another occasion while on photography he was attacked by six triplanes. One of these his observer shot down out of control, while the remainder were forced to withdraw. He then continued his work. At all times he has set a very fine example of courage and determination.

WAR OFFICE, Sept. 24th.

His Majesty the King has been graciously pleased to approve of the following Award to the undermentioned Officer in recognition of his gallantry and devotion to duty in the field:—

THE MILITARY CROSS.

Lt. REGINALD CHARLES VAN DER BEN, Gen. List and R.A.F.

For conspicuous gallantry and devotion to duty. When on contact patrol this officer was severely wounded in the leg from the ground. Notwithstanding this, he continued his offensive action, machine gunning the enemy troops, and told his pilot to carry on, thus enabling him to complete his reconnaissance.

AIR MINISTRY, Sept. 24th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Director.—Lt.-Col. B. H. O. Armstrong, and to be temp. Col. whilst so empld., April 1st.

Assist. Directors.—Graded for purposes of pay as S.O.1., and to be temp. Lt.-Cols. whilst so empld.:—Capt. (temp. Maj.) J. F. Hawkins, Capt. (temp. Maj.) G. Waddell, April 1st.

Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. whilst so empld.:—J. A. H. Gammell, D.S.O., M.C. (Capt., R.A.), and is granted a temp. commn. as Capt., Aug. 20th; Maj. A. H. S. Steele-Perkins, Aug. 23rd.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld., if not already holding that rank:—Capt. J. W. Griggs, Lt.-Col. R. W. Hogarth, Capt. C. G. Milnes, Capt. F. B. Rigby, Maj. E. E. Robb, Maj. A. Struben, Capt. A. M. Taylor, Lt. (temp. Capt.) H. S. Watson, April 1st; Capt. (temp. Maj.) H. St. C. Smallwood, vice Capt. (temp. Maj.) P. le G. Gribble, who relinquishes the temp. rank of Maj., Aug. 19th.

Staff Officers, 3rd Cl.— And to be temp. Capts. whilst so empld., if not already holding that rank:—Lt. H. Chalkley, Capt. W. H. Clegg, Capt. W. A. Daft, Capt. H. T. Humfress, Lt. H. Hooper, Capt. L. E. A. Greatorex, Lt. (temp. Capt.) C. H. Simpson, Capt. G. G. Shepherd, Capt. H. M. Winstanley, Capt. N. H. Wood, April 1st; W. P. Durtnall (Lt., R.N.V.R.), and is granted a temp. commn. as Capt., April 16th; Capt. H. E. Steinberg, April 22nd; Capt. C. F. Brightman, May 6th.

Staff Officers, 4th Cl.—And to be temp. Lts. while so empld., if not already holding that rank:—Lt. (temp. Capt.) H. A. Adams, Lt. H. Booker, Capt. G. H. W. Dawson, Sec. Lt. A. Davies, Sec. Lt. P. D. Stonham, Lt. (temp. Capt.) H. T. Thompson, Sec. Lt. A. B. Turner, Capt. A. F. Wickenden, April 1st; Sec. Lt. H. E. Crowcroft, Sec. Lt. A. E. Hale, June 10th; Sec. Lt. H. F. Robertson, June 14th; Sec. Lt. W. S. Sholl, June 21st; Sec. Lt. E. B. Roscoe, July 10th.

The following temp. appts. are made:—Staff Officers 2nd Cl.—And to be temp. Majs. while so empld.:—Lt. (temp. Capt.) F. Jewell, Lt. (temp. Capt.) S. T. Smith, Lt. (temp. Capt.) A. G. Stradling, Aug. 24th; (P.) Capt. P. Laing, Aug. 20th.

Staff Officers, 3rd Cl.—Lt. (temp. Capt.) C. S. Fulton, and to retain his temp. rank while so empld., vice Capt. E. N. E. Waldron, June 10th; H. R. Radford (temp. Capt., New Armies), and is granted a temp. commn. as Capt., Aug. 5th; Capt. W. St. J. Scott-Scott, Sept. 4th; (Q.) Sec. Lt. W. Myers, M.C., D.C.M., and to be temp. Capt. while so empld., July 22nd.

Staff Officer, 4th Cl. (1st Gr.).—Capt. W. Hayward, Aug. 21st.

Staff Officer, 4th Cl. (2nd Gr.).—Capt. C. S. Nunn, Aug. 21st.

FLYING BRANCH.—Lts. to be temp. Capts., whilst empld. as Capts. (A.):—H. B. Free, W. A. Landry, July 1st; (Hon. Capt.) G. W. Benson, T. B. Bully, A.F.C., G. M. Carter, H. E. Faulkner, H. C. Haydock, E. D. C. Herne, R. V. Kann, F. G. Taylor, C. J. Thompson, R. K. Tailyour, N. W. Wickham, C. E. Young, Aug. 1st; L. S. Arbuthnot, Aug. 15th; A. I. Campbell-Robertson, H. G. Davis, (Hon. Maj.) F. I. Tanner, and to be Hon. Maj., Aug 28th; J. W. Hogben, G. F. Ward, Aug. 29th; G. R. Beck, H. Briggs, D.F.C., N. E. Barraclough, M.C., W. T. Breach, A. Boyle, M.C., R. G. Hammersley, R. T. Mark, M.C., P. Pike, J. W. Schofield, H. L. Webster, A. E. M. Waterton, R. G. Weller, W. E. Windover, J. C. Woollett, Sept. 1st; (Hon. Capt.) A. W. Williams, Sept. 4th; E. Swale, Sept. 5th; A. Beck, S. T. Liversedge, W. S. Philcox, Sept. 6th; J. W. Pearson, Sept. 7th; P. T. Iaccaci, D.F.C., Sept. 8th; J. W. Foreman, W. G. Westwood, Sept. 10th; W. R. May, Sept. 12th; E. D. Asbury, E. S. Coler, J. Collier, Sept. 13th; R. N. Chandler, D. W. M. Miller, Sept. 16th.

Lts. (O.) to be Lts. (A.):—R. C. Purvis, Aug. 28th; C. G. Fenton, S. G. Roberts, Aug. 31st; O. D. Norwood, Sept. 3rd; E. M. Farncomb, Sept. 4th; F. G. C. Dickinson, Sept. 8th; T. H. Upfill, Sept. 9th.

Lt. H. A. Pound, M.C., (late Gen. List, R.F.C., on prob.), is confirmed in his rank as Sec. Lt. (A.) and to be Hon. Lt., June 11th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—W. J. Johnson, April 12th; T. F. Hacquire, July 8th; J. M. Rankin, July 11th; G. E. Dorman, July 12th; F. H. Joynes, A. Beedie, W. F. Gordon, H. Gatfield, P. L. Teasdale, A. B. Dunn, July 13th; R. C. Blanchard, F. L. McArthur, B. H. Travis, July 18th; F. R. Pemberton, July 20th, L. C. Rattle, J. H. V. Wood, T. L. Jones, July 21st; C. H. Living, July 22nd; A. Galt, F. A. McHugh, July 23rd; B. H. Matthews, July 25th; R. L. Taillon, July 26th; G. W. Cormack, Aug. 2nd; W. T. Carew, Aug. 5th; H. V. Jones, Aug. 6th; L. R. Haskell, Aug. 7th; R. W. Johnson, T. K. Bentley, T. D. Goord, Aug. 12th; G. I. Neale, Aug. 13th; H. A. McGrath, W. N. Simpson, Aug. 14th; T. G. Reed, H. D. Anderson, T. G. Braine, F. J. Wilcock, Aug. 18th; J. E. Jenning, Aug. 21st; L. F. Newnham, Aug. 25th; H. R. Acteson, Aug. 28th; L. E. Allanson, Aug. 29th; G. Goad, R. W. Willis, T. Whittaker (date of 1st commn. March 7th), R. Menzies, Aug. 30th; J. C. Stone, W. H. Cox, H. Ellison, R. L. Uden, H. Entwistle (date of 1st commn. Feb. 24th, 1918), F. W. C. Densham, J. C. Lewis, A. J. F. Ross, R. B. Hyslop, E. H. Alliott, F. A. Samuelson, H. C. R. Grant, R. Morris, G. M. Fossick, R. N. Cresswell, L. L. Chapman, J. B. Hately, T. H. Garlick, H. Macmillan, A. Turner, J. L. Bullard, D. G. Cooper, Aug. 31st; G. F. Shreve, Sept. 1st; A. J. Newnham, C. S. Hosegood, Sept. 3rd; G. F. Watson, Sept. 4th; B. Solomons, E. R. Williams, L. F. Hodges, Sept. 5th; L. D. Hamblin, E. O. W. Ayles, Sept. 6th; R. E. Morton, A. C. Davis, Sept. 7th; L. Inggs, P. Dickins, D. H. Godden, W. G. White, C. Wilson, Sept. 8th; J. Russell, E. S. W. Smith, F. C. Bowler, Sept. 9th.

The following are granted temp. commns. as Sec. Lts. (A.):—A. J. D. Rowan, May 11th, C. B. Rait (temp. Lt., Camn. Highrs.), and to be Hon. Lt., May 27th (substituted for notification in "Gazette," July 30th; F. A. Best (temp. Sec. Lt., attd. R. Suss. R.), June 24th; E. M. Drummond (Sec. Lt., R. Highrs.), July 8th; W. U. Hodson, M.C. (temp. Lt., York R.), and to be Hon. Lt., July 13th; W. R. Davison (Lt., R.A.F., T. F.), and to be Hon. Lt., Aug. 15th; E. B. B. Jefferson (Lt., Lpool. R.), and to be Hon. Lt., Aug. 16th; A. A. English, M.C. (Lt., R.E.), and to Hon. Lt., F. R. Witham (temp. Sec. Lt., Northd. Fus., Aug 18th; H. J. Bullock (Lt., Norf. R.), and to be Hon. Lt., Aug. 24th; R. B. Francis (Lt., Can. M.G.C., C.E.F.), and to be Hon. Lt., Aug. 28th; F. H. Osborne (Sec. Lt., Scottish Horse Yeo., T.F.); E. C. Powell (Sec. Lt., Lpool. R., T.F.); R. G. S. Thomson (Sec. Lt., Lpool R., T.F.), Aug. 29th; D. M. Layton (Lt., W. Ontario R., C.E.F.) and to be Hon. Lt.; J. Redmond (Sec. Lt., Lpool R., T.F., Aug. 30th; K. L. Harris (Lt., York. R., T.F.), and to be Hon. Lt.; C. Dixon (Sec. Lt., N. Cyclist Bn., T.F.); C. H. W. Clarke (Sec. Lt., R. Fus.); W. P. James (temp. Sec. Lt., R.W. Surr. R.); H. W. Ogg (Sec. Lt., High. L.I., T.F.); L. B. Hawkswell (Lt., W. York. R., T.F.), and to be Hon. Lt.; L. H. Tuppen (temp. Sec. Lt., Norf. R.); A. J. Franklin (temp. Lt., R. Dub. Fus.), and to be Hon. Lt.; C. E. F. Searle (Lt., W. Kent Yeo., T.F.), and to be Hon. Lt.; C. P. Lee (Sec. Lt., Lond. R., T.F.); V. Foster (temp. Sec. Lt., S. Lanc. R.); J. H. Manicon, M.C. (temp. Sec. Lt., R.W. Surr. R.); M. K. McGregor (temp. Lt., Sco. Rif.), and to be Hon. Lt.; J. L. Jones (temp. Sec. Lt., K.R. Rif. C.); A. G. Batterham (Sec. Lt., R.W. Surr. R.), Aug. 31st; D. S. Cumberlege (temp. Capt., A.S.C.), and to be Hon. Capt., T. Farrar (temp. Sec. Lt., R. Ir. Rif), Sept. 1st; G. W. Armstrong (temp. Sec. Lt., Northd. Fus.); M. E. Patterson (Lt., Alberta R., C.E.F.), and to be Hon. Lt.; C. L. Matson, M.C. (Lt., Lanc. Fus., Spec. Res.), and to be Hon. Lt., Sept. 2nd; B. P. Jones (Lt., Middx. R., Spec. Res.), and to be Hon. Lt.; E. D. Trask (Sec. Lt., R.F.A., T.F.), Sept. 3rd; W. R. Barnett (Sec. Lt., Shrops. L.I.), Sept. 5th; R. Sadler (temp. Sec. Lt., attd. R. War. R.), Sept. 8th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—A. E. Roberts, April 23rd; R. F. J. Dixon, May 19th; S. E. Matthey, Aug. 15th; E. B. Markquick, Aug. 16th; C. H. Clarke, A. F. Welch, A. M. Taylor, Aug. 29th; N. D. Hume, E. C. Rutter, K. Stuart-Smith, Aug. 30th; H. I. Fryer, E. S. Burns, Aug. 31st; E. P. M. Pearson, Aug. 31st; W. H. Brown, G. F. Underhay, G. G. Marsland, D. A. Busby, Sept. 2nd; G. Dutton, Sept. 4th; F. B. Shaw, Sept. 5th; R. E. W. Gwyther, Sept. 6th; H. G. Luther, Sept. 9th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—S. C. Francis, July 6th; J. F. Lochhead, July 29th; D. C. Sewell, Aug. 5th; M. L. P. Chapman, Aug. 9th; H. J. Thorn, Aug. 16th; C. Craib, L. A. Combes, Sept. 6th; J. W. Garratt, Sept. 8th; R. Wood, C. W. Daggett, H. Jackson, Sept. 10th; W. H. Russell, Sept. 11th; L. Badger, Sept. 13th.

Lt. T. Llewellyn to be Lt. Obsr. Officer from (A.), Aug. 30th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—H. L. Herman, April 30th; H. S. Lindfield, May 12th; G. Pattinson, Aug. 30th; W. Shaw (date of 1st commn., Feb. 7th), Sept. 5th; A. G. White, Sept. 6th; J. Ferguson, Sept. 7th; A. T. Rose, Sept 14th; N. P. Jones, P. H. Montgomery, Sept. 19th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—H. O. Edmonds (Sub-Lt., R.N.V.R.), and to be Hon. Lt., June 22nd; R. C. Cowl (temp. Sec. Lt., E. York. R.), Aug. 1st; F. H. Glover (Lt., Lpool. R., T.F.), and to be Hon. Lt., Aug. 18th; C. A. Bonar (temp. Sec. Lt., attd. Glouc. R.), Aug. 27th; G. H. Tarras (Lt., Gord. Highrs., T.F.), and to be Hon. Lt., A. R. Wylde (temp. Sec. Lt., N. Lanc. R.), D. E. Llewellyn (temp. Sec. Lt., Ches. R.), Sept. 2nd; D. R. Morgan (temp. Sec. Lt., Welsh R.), Sept. 3rd; H. W. H. Argyle (temp. Sec. Lt., W. York R.), J. L. Bromley (temp Lt., A.S.C.), and to be Hon. Lt., C. H. Case (temp. Sec. Lt., Manch. R.), D. S. Fox (Lt., Notts and Derby R., T.F.), and to be Hon. Lt., E. Preece (temp. Sec. Lt., High. L.I.), A. B. Radford (Lt., S. Staffs. R., Spec. Res.), and to be Hon. Lt., W. L. Roberts (Lt., Middx. R.), and to be Hon. Lt., W. L. A. Wilkinson (temp. Sec. Lt., Lan. Fus.), T. E. Bruce-Adams (Lt., Durh. L.I., T.F.), and to be Hon. Lt., W. G. Lacey, M.C. (temp. Lt., A.S.C.), and to be Hon. Lt., M. F. M. Wright (temp. Lt., R.E.), and to be Hon. Lt., Sept. 6th; M. O. I. Griffiths (Capt., Suff. R., Spec. Res.), and to be Hon. Capt., R. A. Adams (Lt., C. Ontario R., C.E.F.), and to be Hon. Lt., W. Hamley (Lt., R.F.A., T.F.), and to be Hon. Lt., C. W. Langdon (Lt., Glouc. R., T.F.), and to be Hon. Lt., G. T. Burrill (Sec. Lt., E. Lan. R., T.F.), P. Chavasse (Sec. Lt., I.A.R.O.), H. V. Irving (temp. Sec. Lt., Northd. Fus.), H. P. Jeppe (Sec. Lt., R.G.A., Spec. Res.), H. L. Smith (temp Sec. Lt., Notts and Derby R.), G. Adamson (temp Sec. Lt., Durh L.I.), H. W. Blakeney, M.C. (Lt., R.E.), and to be Hon. Lt., L. F. Gross (temp. Sec. Lt., Northd. Fus.), R. C. Murray, D.C.M., M.M. (Sec. Lt., R.G.A., Spec. Res.), L. Radford (Sec. Lt., R.G.A.), W. F. Wilson (Sec. Lt., R.F.A., Spec. Res.), F. A. Garwood (Sec. Lt., Bedf. R.), L. W. Sharpe (Lt., C. Ontario R., C.E.F.), and to be Hon. Lt., J. E. Kemshall (Lt., Notts and Derby R., T.F.), and to be Hon. Lt., R. C. Norris (Capt., Rif. Brig., Spec. Res.), and to be Hon. Capt., A. P. Thompson (temp. Sec. Lt., York and Lanc. R.), Sept. 14th; P. Loftus (temp. Sec. Lt., attd. R. Muns. Fus.), C. C. Loretto (temp. Sec. Lt., R. Muns. Fus.), Sept. 19th; F. Vaillant (Lt., Can. Forestry Corps, C.E.F.), and to be Hon. Lt., I. B. Boyce (Lt., Lond. R., T.F.), and to be Hon. Lt., T. Pitkethly, M.M. (Lt., Quebec R., C.E.F.), and to be Hon. Lt., Sept. 23rd.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—D. Denne, M. W. Edwards, W. L. Folkard, H. R. Hardcastle, H. A. McKay, W. G. McGregor, S. B. Perry, Aug. 15th; F. R. Irvine, L. J. Ryall, R. Spencer, C. W. Martin, A. E. Sell, G. E. Lewtas, W. Mylam, F. L. Innes, S. A. W. Sechell, J. J. Smith, C. S. Muir, W. R. Waterman, L. W. Kitt, W. C. Ingram, Sept. 12th; J. Hamilton, W. S. Patterson, D. A. Allen, J. F. Lyon, T. L. Calvert, F. Coutts, H. Smith, W. Wallace, Sept 13th; A. J. Richardson, G. H. New, W. H. R. Jarvis, B. V. Featherstonhaugh, K. F. Pedley, Sept. 20th; B. G. Drake, M. W. R. Hey, J. L. Irving, W. T. Neilson, A. E. Popham, E. Soutar, J. P. Thomas, J. Longley, A. A. Maddan, R. R. Parker, G. Riley, H. I. Terry, R. J. Willson, Sept. 21st; F. H. Turrell, A. J. Spencer, T. R. Lole, R. L. Seymour, H. Lansdale, S. G. Floate, T. W. Blaxter, L. G. P. Robinson, Sept. 22nd; F. Naylor, W. H. Boite, Sept. 23rd.

Capt. R. C. N. Smith relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Sept. 25th.

Lt. G. S. Page relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Sept. 25th.

Lt. J. E. Philbrick relinquishes his commn. on account of ill-health and is granted the hon. rank of Lt., Sept. 25th.

Lt. J. V. Barry relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Sept. 25th.

Sec. Lt. H. N. Lee relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 24th.

The following Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—W. B.



CAR NONE THE WORSE AFTER FALLING 60 FEET.

"Sept. 18, 1918.—11-9 A.J. car in the North of Scotland, while rounding a very bad corner, ran over a bank and down it went 60 feet. All the damage was a bent stub axle, and the car is on the road again none the worse."

Original letter filed at Dumfries.



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C.D.C.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

Carter, H. Goodier, W. D. Howie, C McCoombes, W P. Purvis, Sept. 25th.

The date of appt. of Lt. D. M. Deighton as Capt. is June 17th, and not as in "Gazette," Aug. 20th.

The initials and surname of Sec. Lt. J. E. Brooks are as now described, and not as in "Gazette" July 30th.

The surname of Flt. Cadet William Alexander Greig is as now described, not Creig, as in "Gazette," July 19th.

The surname of Lt. A. L. Huether is as now described, and not as in "Gazette," Sept. 3rd.

The notification in "Gazette," July 30th, concerning Sec. Lt. H. J. Ough is cancelled.

The notification in "Gazette," Sept. 6th, concerning Sec. Lt. W. Thompson is cancelled.

The surname of Flt. Cadet James MacDonell is as now described, and not MacDonald as in "Gazette," Sept 3rd.

The Christian names of Flt. Cadet John Edmond Whitehead are as now described and not "John Edward" as in "Gazette" Aug. 27th.

The graduation date of Flt. Cadet John Charles Coleman Lovelace is Aug. 22nd, and not June 25th, as in "Gazette," Sept. 3rd.

ADMINISTRATIVE BRANCH.—Lt. (temp. Capt.) H. A. Whelen to be temp. Maj. whilst empld. as Maj., Sept. 14th.

Lts. to be temp. Capts. whilst empld. as Capts.:—C. J. Mitchell, May 27th; P. J. Curd, Sept. 1st; F. B. Luget from (T.), Sept. 14th.

Sec. Lts. (temp. Lts.) to be temp. Capts. whilst empld. as Capts.:—C. H. Blake, D.C.M., A. J. Bright, Sept. 1st

Sec. Lt. H. A. Maynard to be temp. Capt. whilst empld. as Capt. from (T.), Aug. 14th.

Lt. A. F. Tabraham to be Lt., from (T.), June 6th (Substituted for notification in "Gazette," Aug. 30th).

Lt. W. S. Cole, C.M.G., D.S.O. (late R.N.V.R.), is granted a temp. commn. as Capt., July 29th.

The following are granted temp. commns as Lts., and to be Hon. Capt.:—F. Dickinson (Capt., Leic. R.), June 12th, P. W. McLean (Capt., Sea. Highrs.), Sept. 9th; T. E. Gentles (temp. Capt., Labour Corps); F. F. McKenna (temp. Capt., York and Lanc. R.), Sept. 11th; T. Rumney (Lt., R.F.A.) is granted a temp. commn. as Lt., June 1st.

Lts (A.) to be Lts.:—C. S. Wells, April 1st; C. D. B. Stiles, Aug. 8th; D. H. Houston, Sept. 1st; G. G. Coury, V.C., Sept. 5th; A. D. Martin, Sept. 7th; G. H. Leonard, Sept. 12th; E. G. Roberts, Sept. 13th.

Lts. (O.) to be Lts.:—E. T. Turner, July 3rd; J. A. Gorges, Sept. 9th; A. R. Sheppard, Sept. 14th; E. M. Smith, Sept. 17th.

Capt. A. G. Macdonald reverts to Lt. from (O.), Sept. 12th.

Sec. Lts. to be temp. Lts. while empld as Lts.:—(Hon. Lt.) T. Hobson, July 1st; C. Gruchy, Aug. 26th.

A. J. E. Sumner is granted a temp commn. as Sec. Lt., and to be temp. Lt. while specially empld., Sept. 1st.

The following are granted temp. commns as Sec. Lts.:—G. Earl, Aug. 6th; T. L. Grey, and to be Hon. Lt., Sept. 12th; H. Seely, S. H. Meintjes, M. V. Coller, J. W. Smith, E. H. Hamilton, A. E. Wycherley, A. J. H. Homan, M. Worms, W. R. Taylor, F. N. Trier, E. J. Syer, S. T. Pye, M. P. Stoneham, H. W. Levy, T. A. Myers, C. W. M. Sabine, C. A. Seymour, A. W. H. Keen, H. P. Johnson, A. H. Hicks, P. C. Heming, T. L. Gulliver, L. O. Duncan, C. A. Broadhurst, C. R. Cunningham, F. Bunting, S. Howard, I. Green, W. J. Terry, W. Wood, S. McK. Pullen, J. A. Peoples, E. A. Taylor, J. W. Tough, A. Gall, W. J. A. Rogers, R. W. Simpson, W. J. Terry, J. K. Henderson, V. F. Maude, Sept. 20th; E. J. Cam, E. C. Fisher, F. T. Harris, T. H. Lamb, L. M. Moss, A. Nash, and to be Hon. Lt., T. A. Rowlands, C. H. Sims, T. Sutherland, and to be Hon. Lt., W. J Tuck, C. Wallace, A. E. Walker, G. Workman, Sept. 21st.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—J. W. Clark, E. W. Ridgway, Sept. 25th.

Sec. Lt. H. Roughton relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 25th.

The date of relinquishment of Capt R. D. Bartlett (Lt., R.N.V.R.) is July 8th, and not as in "Gazette" July 9th

TECHNICAL BRANCH.—Capts. to be temp. Majs. whilst empld. as Majs.:—B. C. Clayton from (A.), Aug. 14th; C. E. Fairburn, Sept. 9th.

Lts. to be temp. Capts. whilst empld. as Capts.:—M. A. Chappell, W. L. Joseph, May 15th; T. Moore, June 10th; (Hon. Capt.) W. E. Smith, Aug. 1st; H. H Kilby, A. T. Wynward-Wright from (A.), Sept. 1st; P. B. Moxon, Sept. 9th; Sec. Lt. (temp. Lt.) W. W. Scott-Davidson to be temp. Capt. whilst empld. as Capt. from (Ad.), Sept. 1st.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—A. W. Brittain, J. Bullock, (Hon. Lt.) H. M. Rootham, C. W. B. Tubbs, July 1st; M. S. Keogh, July 23rd; S. G. Yapp, Aug. 26th; J. N. Eastcott, W. A. Gaye, J. Mackie, W. Stanton, W. K. Yarnold, Sept. 1st; A. T. Williams, Sept. 10th; (Hon. Lt.) G. R. Waters, Sept. 14th.

Lt. H. W. L. Poole to be Lt. from (A.), May 3rd.

Lt. G. S. B. Fuller to be Lt. from (O.), July 1st.

A. J. Toomer is granted a temp. commn. as Sec. Lt., Sept. 23rd.

The following relinquish their commns. on ceasing to be empld.:—Capt N. W. Hughes (Lt., R.N.V.R.), Sept. 13th; Sec. Lt. P. J. Bertin, Sept. 19th.

MEDICAL BRANCH.—H. A. Treadgold is granted a temp. commn. as Capt., and to be temp. Maj. while so empld., but without pay and allowances of that rank, Sept. 2nd.

DENTAL BRANCH.—A. C. S. Cottam is granted temp. commn. as Lt., Sept. 21st.

MEMORANDA.—To be temp. Lt.-Cols.:—Capt M. Deacon, while empld. as Chief Water Engr.; Maj. J. K. D. Restler, while empld. as Chief Elec. Engr., April 1st.

Hon. Lt. J. C. Pape is granted hon. rank of Capt. while empld. as Inspector, A.I.D., Sept. 4th.

W. Myers, M.C., D.S.M. (Sec. Lt., Northd. Fus.), is granted temp. commn. as Sec. Lt., July 15th.

Col. (temp. Brig.-Gen.) W. B. Caddell relinquishes temp. rank of Brig.-Gen., Aug. 20th.

Lt. (temp. Capt.) W. T. C. Riley relinquishes his temp. rank on ceasing to be empld. as Station Adjt., July 11th.

The notification in "Gazette," July 9th, concerning Lt. B. Turner is cancelled.

WAR OFFICE, Sept. 25th.

REGULAR FORCES.—OVERSEA FORCES.—CANADA.—NOVA SCOTIA REGT.—Temp. Capt. V. Hodson is secd. for duty with the R.A.F. July 6th, 1918.

SASKATCHEWAN REGT.—Temp. Capt. F. MacG. Davies relinquishes his commn. on transfer to the R.A.F. June 6th, 1918.

AIR MINISTRY, Sept. 27th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Staff Officer, 2nd Cl.—Capt. C. L. D. Willcox, and to be temp. Maj. whilst so empld., Sept. 9th.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld., if not already holding that rank:—Lt. (temp. Capt.) J. K. Mountain, vice Lt. (temp. Capt.) H. N. Nowell, May 31st; Lt. C. J. S. Holden, vice Lt. (temp. Capt.) H. Atkins, July 12th.

Staff Officers, 4th Cl.—Sec. Lt. (Hon. Lt.) R. V. J. S. Hogan, and to be temp. Lt. whilst so empld., vice Sec. Lt. (temp. Capt.) H. J. Taplin, May 22nd. The following temp. appts. are made:—

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld.—Lt. (Hon. Capt.) F. Lindsay, July 14th; Lt. (temp. Capt.) P. C. Hoyland, vice Capt. (temp. Maj.) T. M. Eggar, Sept 14th; (Air) Capt. (temp. Maj.) A. Murray, Aug. 5th, (Q.) Lt. (temp. Capt.) R. A. Trelease, Aug. 11th.

Staff Officers, 3rd Cl.—Capt J. J. Breen, vice Lt. (temp. Maj.) P. C. Hoyland, Sept. 14th (P.); Capt. F. F. Loyd, Sept. 6th.

Staff Officers, 4th Cl. (2nd Gr.).—(Substituted for notification in the "Gazette" of Sept. 17th) Lt. V. L. Anderson, June 17th; Capt. G. B. Anderson, Aug. 7th

FLYING BRANCH.—Lts. to be temp. Capts. while empld. as Capts.—J. D. D'A. Northwood, P. E. Welchman, M.C., D.F.C., Sept. 13th; (Hon. Capt.) E. B. Drake, Sept. 14th; H. P. Chubb, G. M. Duncan, Sept. 16th; G. T. Wix, Sept. 17th; A. F. Peacey, Sept. 19th; F. Belway, Sept. 20th; F. J. Cunningham, Sept. 21st.

Capt. (temp. Maj.) J. H. C. Minchin relinquishes the temp. rank of Maj. on reversion to Capt. (A.) from S.O., July 15th.

Lt. J. S. Chandler to be temp. Capt. while empld. as Capt. (K.B.), Aug. 7th.

Sec. Lt. (Hon. Lt.) C. N. Poynton, M.C., to be temp. Lt. (K.B.) while empld. as Balloon Comdr., Sept. 12th.

Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—E. E. Dafoe, Aug. 22nd; F. W. Taylor, S. D. Evans, W. E. Osterburg, C. D. Neill, K. K. Johnson, R. C. McLeod, F. N. York, Sept. 12th; J. A. Carr, F. D. Robinson, W. J. Brown, F. H. N. Marson, A. Sorley, G. W. A. Ireland, Sept. 13th; H. H. Gilbert, D. N. King, W. Simpson, C. G. Davies, J. H. O'Grady, Sept. 14th; H. P. Clarke, Sept. 15th; G. H. Smith, Sept. 17th.

S. N. Hill (Lt., attd. Middx. R.) is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Lt., April 20th. (Substituted for notification in the "Gazette" of May 24th).

J. Duncanson (Lt., Can. M.G.C., C.E.F.) is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Lt., May 30th. (Substituted for notification in the "Gazette" of July 5th.)

W. J. Collett is granted a temp. commn. as Sec. Lt. (A. and S.), Sept. 26th.

Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—A. W. Macdonald, M. D. Laurenson, June 14th; G. Dobell, July 6th; A. H. Murison, July 13th; R. A. Grant, July 23rd; J. Donnan, S. A. Goodman, F. C. Greene, R. J. Joubert, S. R. Hooper, Aug. 13th; R. S. Koller, C. U. Church, R. S. Hancock, Aug. 24th; V. Heller, G. J. Hofmeyr, H. V. Hinwood, Aug 31st, E. W. Highton, Sept. 12th; J. I. Buirski, C. W. H. M. Devenish, C. J. G. Hunter, J. H. H. Douglas, W. H. Spencer, P. H. Davis, C. H. Dickson, B. P. Hawkins, W. V. Berry, W. G. Baker, E. W. Harris, R. G. H. Hopley, Sept. 14th.

Cadet C. N. Watson is granted a temp. commn. as Sec. Lt. (K.B.), May 6th.

Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—A. Lister, B. Carlton-Smith, Aug. 23rd; R. Mackinnon, R. A. Sinclair, Sept. 16th; R. L. Rogers, F. A. Wilson, F. W. Byrne, E. H. Wilcockson, R. G. Molenkamp, F. P. Regan, C. C. Graham, Sept. 25th.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. (Hon. Lt.) W. H. Lyell (Lt., Gord. Highrs.), Aug. 14th; Capt. J. Whittaker (Capt., E. Lancs. R., T.F.), Sept. 5th; Lt. S. Lambert (Lt., E. Yorks. R., T.F.), Sept. 6th.

Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—P. Francis, H. P. Stewart, C. A. Vick, Sept. 28th.

Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—J. L. Heard, D. W. Mason, Sept. 28th.

Sec. Lt. (Hon. Lt.) W. O. Ford relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Sept. 28th.

Sec. Lt. G. Randell relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 28th.

Lt. T. G. Kernick resigns his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Sept. 28th.

Sec. Lts. resign their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—J. G. Anderson, A. H. Bristow, J. R. S. Cox, J. L. Eastwood, A. L. E. Edwards, J. Gannon, W. L. P. Gould, W. B. Jones, L. Marriott, S. H. Roberson, J. J. Ward, Sept. 28th.

The rank of Lt. S. J. Brewer is as now described, and not as stated in the "Gazette" of July 23rd.

The name of Raymond Jack Tucker is as now described, not "Jack Tucker Raymond," as stated in the "Gazette" of Sept. 3rd.

The notification in the "Gazette" of June 28th, regarding Sec. Lt. A. Wilkinson, is cancelled.

The notification in the "Gazette" of May 21st, concerning Cadet D. A. Watson, is cancelled.

The notifications in the "Gazette" of Sept. 10th, concerning the undermentioned Flt. Cadets are cancelled:—C. A. Spooner, A. Russell, J. B. Robson, B. Riley, S. Perkins, R. F. Tomlinson.

The notification in the "Gazette" of Sept. 17th concerning Flt. Cadet A. V. Kidd is cancelled.

ADMINISTRATIVE BRANCH.—To be temp. Capts. while empld. as Capts.:—Sec. Lt. G. P. Abbott, from (T.), Sept. 9th; Lt. J. C. B. P. Seaver, Sept. 17th

J. W. Culme-Seymour (late Lt., R.N.V.R.) is granted a temp. commn. as Capt., Aug. 16th.

The following are granted temp. commns. as Lts.:—M. Delaney (late Qrmr. and Hon. Lt., Yorks R.), June 4th; R. L. C. Brooker (Maj., ret. pay), and to be Hon. Maj., June 11th; B. F. Ford (Lt., Devon R.), and to be temp. Capt. while empld. as Capt., Aug. 1st; F. Badham, M.C. (temp. Lt., Welsh R.), Sept. 1st; E. C. Meyer (Lt., Essex Yeo.), Sept. 11th; E. W. Burrin (temp. Lt., W. Yorks R.), Sept. 16th.

H. F. Green (Sec. Lt., R. Fus.) is granted a temp. commn. as Sec. Lt., and to be temp. Capt. while empld. as Capt., Sept. 17th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—J. A. Anderson, July 30th; G. E. Nicol, Sept. 10th.

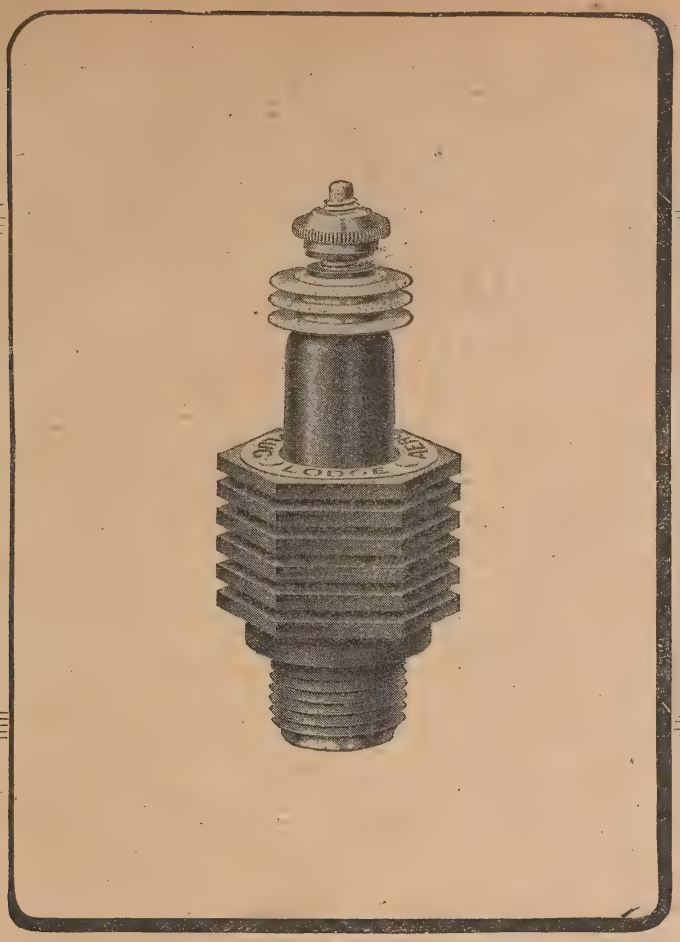
The following are granted temp. commns. as Sec. Lts.:—T. P. Jones, April 1st; E. R. W. Lincoln, June 1st; K. M. Grahame (temp. Sec. Lt., D. of Corn. L.I.), June 18th; R. W. P. Butler (temp. Sec. Lt., Rif. Brig.), July 1st; A. F. Woods, Aug. 27th; H. T. Evans (temp. Sec. Lt., Labour Corps), Sept. 5th; S. G. Menell, Sept. 20th; W. W. Archer, W. T. Gilmour, M. T. Saunderson, Sept. 21st; W. E. Andrews, R. W. Forsyth, H. N. Hasler, H. Murnaghan, C. T. Parker, W. J. Pigott, H. T. Robinson, D. R. Samuel, P. F. Westerman, Sept. 23rd; J. Vinns, D. S. G. Burton, J. S. Card, A. G. Darling, G. A. Denty, A. T. Iles, W. Littlemore, H. R. Mayes, W. H. Shayler, Sept. 26th; A. K. O. Cochrane (late Capt., Yorks R.), and to be Hon. Capt.

Capt. R. G. G. Harley (Lt., R.N.V.R.) relinquishes his commn. on ceasing to be empld., Aug. 10th.

Lt. A. F. Britton, M.C., relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Sept. 28th.

Sec. Lt. H. N. Bulley resigns his commn., Sept. 28th.

Sec. Lt. A. W. McCulloch resigns his commn. to resume his medical studies, and is granted the hon. rank of Sec. Lt., Sept. 28th.



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Sec Lt. T. McI. Ross relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Sept. 28th.

The appt. of Lt. (Hon Capt.) A. Cleave is antedated to July 30th.

The date of appt. of Lt. G. H. Watts as temp. Capt. is April 1st and not as stated on page 8628 of "Gazette," July 23rd.

The surname of Sec. Lt. (Hon. Lt.) A. Duthie is now described and not as stated on page 10789 of "Gazette," Sept. 13th.

Technical Branch.—Maj. J. U. Kelly, D.S.O., to be Maj. from (A.), Sept 11th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—(Hon. Capt.) M. F. L. Selby, and to be Hon. Capt., July 27th; A. J. Morris, Sept. 12th.

Lt. B. E. Leeson to be Lt. from (O.), July 26th.

The following are granted temp. commns. as Lts. :—A. W. Isherwood (Sub-Lt., R.N.V.R.), Aug. 15th, sen. from April 1st; H. W. N. Drummond (Lt., Brit. Col. R. D., C.E.F.), Sept. 27th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. :—W. West, C. J. Langman, St. J. G. C. Clerke, April 18th; A. H. Opie, April 26th; F. J. P. Disney, Aug. 29th; E. E. Lewis, Sept. 7th.

Sec. Lts. (Ad.) to be Sec. Lts. :—J. E. Betts, June 13th; H. E. G. Richards, Aug. 3rd; G. H. Mewes, Aug. 17th; J. S. Hodgson, Aug. 24th; R. J. Adam, Aug. 31st; F. E. Openshaw, W. T. Daniell, J. H. Jones, Sept. 7th; R. L. G. Simpson, W. E. Truman, A. S. Wall, Sept. 10th; R. V. Weeks, E. Sparshott, Sept. 11th.

Lt. S. P. Ashton to be Sec. Lt. and to be Hon. Lt. (from (Ad.), Sept. 7th. The following are granted temp. commns. as Sec. Lts. :—C. Wilson (Sub-Lt., R.N.V.R.), and to be Hon. Lt., Sept. 1st; T. W. Cummins, Sept. 14th; W. T. T. Glassbrook, B. Greig, H. E. Powell, H. B. Smith, H. F. Wilkins, Sept. 23rd; W. B. Bond, E. J. Hindsley, F. J. Matthews, B. E. D. Pratt, Sept. 26th.

Capt. A. C. Lovesy (Lt., R.N.V.R.) relinquishes his commn. on ceasing to be employed, Aug. 31st.

Lt. G. H. Heeley relinquishes his commn. on account of ill-health and is granted the hon. rank of Lt., Sept. 28th.

Medical Branch.—E. G. Fearnsides is granted temp. commn. as Capt., and to be Hon. Maj., Sept. 23rd.

R. B. Lilly is granted a temp. commn. as Capt., Sept. 25th.

The following are granted temp. commns. as Lts. :—E. F. Wilson, Sept. 23rd; S. A. Clark, Sept. 25th.

Dental Branch.—H. O. Salt is granted a temp. commn. as Lt., Sept. 23rd.

Memoranda.—Sec. Lts. (on prob.) relinquish their commns. on ceasing to be empld. :—T. F. Lavelle, May 11th; R. T. Mackenzie, June 22nd.

Sec. Lt. (on prob.) H. L. Sellar relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lt., Sept. 28th.

The date of appt. of Capt. J. J. Meakin as temp. Maj. is May 24th, and not as stated on page 8,629 of the "Gazette," July 23rd.

Sec. Lt. E. A. Parnell to take rank and precedence as if his appt. as Sec. Lt. bore date Aug 16th.

War Office, Sept. 28th.

REGULAR FORCES.—Staff Attd. to H.Q. Units.—Area Comdt. (Cl. S.).—Lt.-Gen. Sir D. Henderson, K.C.B., D.S.O., vice Col. G. F. Phillips, C.B., C.M.G., who relinquishes the temp. rank of Brig.-Gen. (Aug. 10th).

War Office, Oct. 1st.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Adjt.—Lt. H. Casseis, Jnr., Cent. Ontario R., C.E.F., and to be temp. Capt. (with pay and alowances as Lt.) whilst so empld., Feb. 1st, 1918.

FROM THE COURT CIRCULAR.

Buckingham Palace, Sept. 24th.

The King held an Investiture of the Most Excellent Order of the British Empire at 10.30 o'clock this morning.

The following officer was introduced into the presence of His Majesty, when The King invested him with the Insignia of the Division of the Order into which he had been admitted :—

Officer.—Capt. Frank Barnwell.

Buckingham Palace, Sept. 25th.

Maj.-Gen. F. H. Sykes (Chief of the Air Staff, Royal Air Force), had the honour of being received by The King.

Buckingham Palace, Sept. 26th.

The following were severally introduced into the presence of The King, when His Majesty invested them with the Insignia of the respective Divisions of the Orders into which they have been admitted :—

The Distinguished Service Order and the Military Cross and Bar.—Capt. Henry Woollett, R.A.F.

The Distinguished Service Order and the Military Cross.—Col. William Mitchell, High. L.I., attd. R.A.F.

The Distinguished Service Order.—Lt.-Col. Charles Finch-Noyes, R.A.F.; Lt.-Col. Warwick Wright, R.A.F.; Lt. John Mosby, R.A.F.

The King then conferred decorations as follows :—

The Distinguished Service Cross.—Maj. George Breeze, R.A.F.; Maj. Arthur Cooper, R.A.F.; Capt. Frederick Fraser, R.A.F.; Capt. Ralph Sorley, R.A.F.

The Military Cross and Bar.—Capt. Robert Grosvenor, Dragoon Guards, attd R.A.F.; Capt. John Leacroft, R.A.F.; Lt. John Smith, R.A.F.

The Military Cross.—Lt.-Col. Arthur Child, R.A.F.; Lt.-Col. Napier Gill, R.A.F.; Maj. John de Courcy, R.A.F.; Capt. Clive Brewster-Joske, R.A.F.; Capt. Alexander Pentland, R.A.F.; Capt. Charles Rogers, R. Berkshire Regt., attd. R.A.F.; Capt. Geoffrey Streatfield, R.A.F.; Lt. Hugh Blakeney, R.E., attd. R.A.F.; Lt. Bertram Head, North. Fus., attd. R.A.F.; Lt. Robert Herring, London Regt., attd. R.A.F.; Lt. William Mackenzie, R.A.F.; Lt. Lawton Moss, R.A.F.; Lt. Eric Stanes, Manch. Regt., attd. R.A.F.; Lt. Thomas Upfill, R.F.A., attd. R.A.F.

Buckingham Palace, Sept. 27th.

Maj.-Gen. Sir Hugh Trenchard had the honour of being received by his Majesty.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

Sept. 29th.—Royal Air Force contingents working with the Navy are co-operating in the Belgian offensive, and during yesterday approximately 13 tons of bombs were dropped.

Two trains were set on fire and several ammunition dumps destroyed. Massed motor transports and a hostile battery were also attacked, and casualties were inflicted by low-flying machines on concentrations of infantry, horse-gun teams, and other enemy formations, whilst spotting was successfully carried out for British monitors shelling the German coast defences.

During the latter part of the day hostile aircraft in large formations—working well on the enemy side of the lines—were encountered. Four enemy machines were destroyed, and four driven down out of control.

Thirteen of our machines are missing, the majority of which failed to return from over the enemy lines after a sudden and violent rainstorm in the early hours of the morning.

Sept. 29th.—Royal Air Force contingents working with the Navy, in addition to co-operating in the Belgian offensive, have, during the period Sept. 23rd-27th, kept enemy shipping under continual observation.

Enemy destroyers have been bombed and attacked by machine-gun fire, and bombing raids have been carried out on Zeebrugge, Ostend, Bruges, and aerodromes in the vicinity of Ghent.

Severe fighting has taken place in the air, 12 enemy machines having been destroyed and 14 driven down out of control.

Ten of our machines are missing.

In home waters anti-submarine and convoy patrols have been maintained, and a squadron of large seaplanes carried out a long reconnaissance in the Heligoland Bight.

MILITARY.

G.H.Q. Communiqués.

Sept. 24th, 7.20 p.m.—Overcast and rainy weather continued till late in the day on September 23rd, when conditions began to improve. At night there was a clear sky. Enemy activity in the air was slight and intermittent. Our squadrons persisted throughout the day in their various tasks, including observation for artillery fire.

Eight hostile machines were destroyed and three driven down out of control. Four of our machines are missing. In addition, two German machines were brought down by our anti-aircraft batteries.

Only 1½ tons of bombs were dropped by us in daylight, but after the moon rose our night-flying squadrons attacked enemy aerodromes, railheads, and hutments with vigour and effect, dropping 17½ tons of bombs without losing a machine.

Sept. 25th, 8.3 p.m.—In fine, but cloudy weather, our squadrons carried out a great deal of useful work on Sept. 24th.

Over 2,000 photographs were taken and our reconnaissance machines covered a wide area both by day and night. Observation for our artillery was given as usual by our aeroplanes and balloons, which reported much damage in enemy battery positions as the result of our fire.

Twelve and a half tons of bombs were dropped during the 24 hours, two German aerodromes and several railway junctions being heavily attacked.

There was much aerial fighting, in the course of which 31 hostile machines were destroyed, together with eight balloons. Twenty-two hostile machines were driven down out of control.

Our missing machines number ten.

Sept. 26th, 8.10 p.m.—On Sept. 25th, in cloudy but improving weather, our observation machines were actively at work.

In air fighting, ten enemy machines were destroyed, and three driven down out of control. Another enemy machine was brought down in flames at night.

During the 24 hours we dropped 35 tons of bombs on hostile aerodromes and railway connections.

Three of our aeroplanes are missing.

Sept. 27th, 7.52 p.m.—Our machines had a busy day on Sept. 26th, carrying out a large number of reconnaissance flights and watching the effect of our artillery fire.

Over 20 tons of bombs were dropped on enemy dumps, railheads, and billets.

In a raid on an enemy aerodrome, several hangars were set on fire, a hostile machine was destroyed on the ground, and seven others which attempted to repel the attacking squadrons were shot down. Four more hostile machines were destroyed on other parts of the front.

Five of our machines were missing during the day.

Little flying was possible at night. We dropped 3½ tons of bombs without loss to us.

Sept. 28th, 7.50 p.m.—Our machines were active on every part of the front throughout Sept. 27th, and kept close watch from the air on the course of the various operations.

Bombing patrols were carried out at a low altitude on the battle front, and enemy troops and transport at the Canal crossings and along the road were heavily engaged with machine-gun fire by our pilots. Our machines working in co-operation with the artillery reported a great number of targets and observed the fall of the rounds. Many explosions and fires were seen to be caused in hostile battery positions. Over 1,000 photographs were taken in the course of the day.

In addition to extensive bombing just beyond the lines, several enemy aerodromes and a number of railway junctions were attacked with excellent effect. Many of our night-bombing machines made several journeys over the lines. Thirty tons of bombs were dropped by us by day and 18½ tons by night.

Twenty-two German machines and eight hostile balloons were shot down by our aviators. Twenty of the enemy's machines were driven down out of control in the course of air fighting. Another machine was destroyed by our anti-aircraft fire.

Nineteen of our machines are missing.

Sept. 29th, 9.52 p.m.—The Air Force co-operated in every phase of

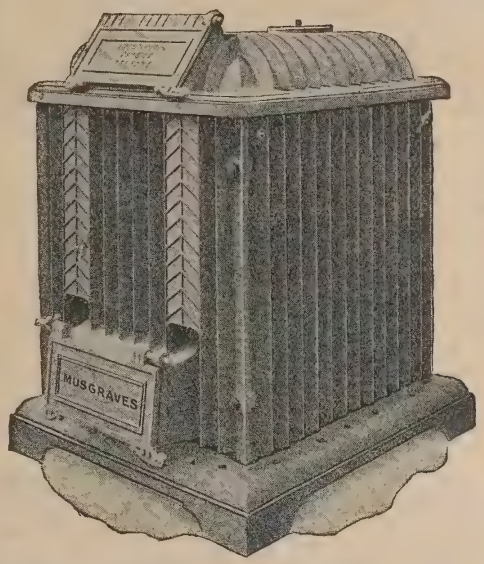
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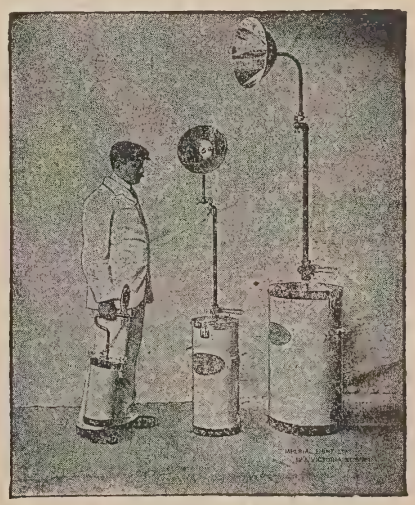
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Saturday's operations. Patrols carried out their flights far behind the German lines, reconnoitring roads and railways both by day and by night, and reporting the trend of enemy movements.

In spite of clouds and rain, some very successful observation work for our field and heavy batteries was accomplished by aeroplanes and balloons. The location of our advancing troops was constantly reported by contact patrols to the headquarters of formations. Bombs were dropped and machine-gun fire was operated from an extremely low height on the enemy's troops, transport trains, and gun teams. Heavy casualties were inflicted.

Twenty-two enemy machines were destroyed during the day and three driven down out of control.

Twenty-four of our machines are missing.

The total weight of bombs dropped during the day was 22 tons.

At night bombing was continued with even greater intensity, although weather conditions were not favourable. Thirty-four tons were dropped by us, many machines continuing their attacks almost until dawn.

All our night-flying aeroplanes returned safely.

Sept. 30th, 7.20 p.m.—There was much activity in the air on Sept. 29th, though in the afternoon the weather turned to rain, and flying was much impeded.

No fewer than 15 hostile balloons were shot down in flames by our aviators, and many more were compelled to descend to avoid destruction.

Twenty-six German aeroplanes were brought down in air fighting, and another hostile machine was brought down by our anti-aircraft fire. Nine others were driven down out of control.

Nineteen of our aeroplanes are missing. One of the machines reported as missing on Saturday has now returned.

Low bombing and machine-gun fire were continually employed to harass the enemy, and many direct hits on his communications were obtained. Photographic and reconnaissance patrols covered a wide area. Machines engaged in artillery co-operations worked all day with our batteries, reporting many favourable targets and observing the effect of the fire.

The total weight of bombs dropped by us was 36 tons, stations and junctions on the railway systems serving the fighting zones being specially selected for attack.

No flying was possible at night.

AIR FORCE.

Air Ministry Communiqués.

Sept. 25th.—On the 25th inst. our squadrons attacked the enemy aerodrome at Buhl with good results. Bursts were observed on and near the hangars

All our machines returned.

One squadron attacked Kaiserslautern, bursts being observed near the station and munition factories

Our machines were attacked on the return journey by large numbers of enemy aircraft, and protracted fighting took place, as a result of which two enemy machines were destroyed.

Three of our machines have not yet been located.

Sept. 26th.—With reference to yesterday's *communiqué*, it has now been established that, during the raid on Kaiserslautern, two enemy aircraft were shot down out of control, besides the two already reported destroyed.

In addition to the machines reported missing, one reconnaissance machine has not returned.

At noon on the 25th inst. our aeroplanes attacked the factories at Frankfurt with good results.

Large numbers of enemy aircraft were encountered and very heavy fighting took place, as a result of which five enemy aircraft were shot down out of control.

Four of our machines failed to return.

Sept. 27th.—In conjunction with the operations undertaken yesterday by French and American troops, our machines in the afternoon attacked the railways at Metz-Sablon and Audun-le-Roman (north of Briey), with very good results.

Large numbers of enemy aircraft were encountered, and bitter fighting took place. Two enemy aircraft were destroyed and one shot down out of control.

Six of our machines failed to return.

During the night of the 26th-27th further heavy attacks were made on Metz-Sablon, and many direct hits were observed. The railways at Mezières, Thionville, and Ars, and Frescaty aerodrome were also heavily attacked. Several direct hits were observed on Thionville Station and on the railway junction

The total weight of bombs dropped during the day and night was 13¾ tons.

All our night-flying machines returned

THE CASUALTY LIST.

MILITARY.

Reported Sept. 25th.

Canadian Force.—Wounded.—Warner, Lt. G. L., Que. R., attd. R.A.F.

Reported Sept. 27th.

Australian Force.—Correction.—Accidentally Killed.—Dunn, Lt. R., F.C., should read:—Dunn, Sec. Lt. R., F.C.

Reported Sept. 30th.

Canadian Force.—Previously reported Missing, now reported Killed.—McElroy, Lt. V. H., Can. Eng., attd. R.A.F.

Missing.—Saunders, Lt. H. C., M.M., B.C. Regt., attd. R.A.F.

Previously reported Wounded and Prisoner, now reported Died of Wounds as Prisoner in German Hands.—Chant, Lt. E. M., B.C. Regt., attd. R.A.F.

AIR FORCE.

Reported Sept. 26th.

Killed.—Buck, Capt. G. S., D.F.C., M.C., R.A.F.
Coleman, Sec. Lt. L., R.A.F.
Davies, Capt. I. G., R.A.F.
Davies, Sec. Lt. N., R.A.F.
Halliday, Sec. Lt. J. G. W., R.A.F.
O'Flynn, Sec. Lt. G. B., R.A.F.
Parker, Sec. Lt. H., R.A.F.

Died of Wounds.—Cumming, Lt. H. W. M., R.A.F.
Kirby, Sec. Lt. C. F., R.A.F.

Previously reported Wounded, now reported Died of Wounds.—Keen, Maj. A. W., M.C., R.A.F.

Wounded.—Ball, Lt. B. B., R.A.F.; Brown, Sec. Lt. G. A., R.A.F.; Brown, Sec. Lt. M. E., R.A.F.; Fox, Lt. F. W., R.A.F.; Garlake, Sec. Lt. J. C., R.A.F.; Hunter, Lt. L. J., R.A.F.; Mercer, Lt. P. E., R.A.F.; Notley, Lt. H. S., R.A.F.; Schofield, Sec. Lt. G. C., Leic. R., attd. R.A.F.; Taylor, Sec. Lt. A., R.A.F.

Missing.—Bridgett, Sec. Lt. C., R.A.F.; Cole, Lt. H. A., R.A.F.; Crosby, Sec. Lt. E. E., R.A.F.; Gage, Sec. Lt. C. R., R.A.F.; Lloyde, Lt. J. P., R.A.F.; Wogan-Browne, Sec. Lt. C. P., R.A.F.

Reported Sept. 27th.

Killed.—Boyce, Lt. E. F., R.A.F.
Nelson, Lt. H. L., R.A.F.
Parfitt, Sec. Lt. F. A., York and Lanc. R. and R.A.F.
Possolo, Lt. E. S., R.A.F.
Sutherland, Sec. Lt. H. A., R.A.F.
Tedbury, Sec. Lt. R. N., R.A.F.
Towler, Sec. Lt. C. J., R.W. Kent R. and R.A.F.
Woollard, Lt. G. E., D. of Well. R. and R.A.F.

Drowned.—Smith, Sec. Lt. F. F., R.A.F.

Previously reported Missing, now reported Missing, believed Killed.—Belgrave, Capt. J. D., M.C., Oxf. and Bucks. L.I. and R.A.F.
Boothman, Sec. Lt. C. D., R.A.F.
Cutmore, Lt. W. C., R.A.F.
Dickinson, Lt. H. M., R.A.F.
Duncan, Sec. Lt. W. G., R.A.F.
Forsyth, Capt. W. A., R.F.A., attd. R.A.F.
Fyfe, Sec. Lt. R. J., R.A.F.
Goller, Sec. Lt. J. M., R.A.F.
Hirst, Sec. Lt. S., R.A.F.
Hughes, Lt. J. M., S. Lanc. R., attd. R.A.F.
Learn, Lt. G. A., R.A.F.
Robertson, Lt. W. S., R.A.F.
Sieveking, Capt. V. E., D.S.O., R.A.F.
Stubbs, Lt. W. H., R.A.F.
Wild, Sec. Lt. H., R.A.F.

Previously reported Missing, now reported Prisoners of War.—Kemp, Lt. F., R.A.F.
Lewis, Sec. Lt. R. G., R.A.F.

Interned.—Lloyd, Lt. A. C., R.A.F.
Wilson, Sec. Lt. M. G., R.A.F.

(Owing to pressure on space a number of Air Force casualties are held over.)

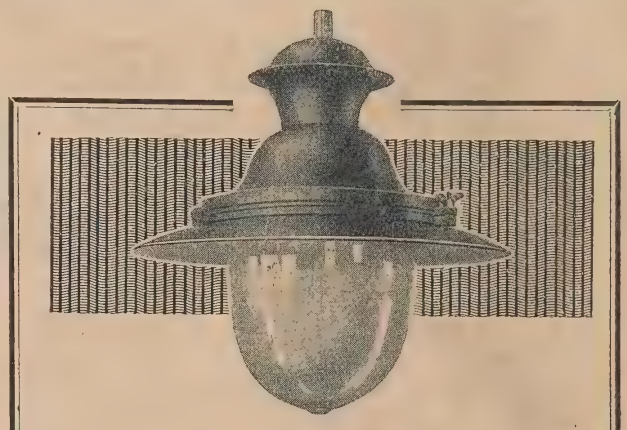
PERSONAL NOTICES.

NAVAL

Deaths.

DUDLEY-SCOTT.—Lt. Herries Knocker Dudley-Scott, R.A.F., late Flt. Sub-Lt., R.N., was killed in an aeroplane accident on Sept. 22nd. He was the only son of the late Mr. John Dudley-Scott, of Horsley Priory, Gloucestershire, and of Mrs. Lush, and step-son of Major R. F. Lush (late West Yorkshire Regt.), of Montagu House, Beccles. He was 19 years of age. He was educated at Roydon Hall, Diss, and at Bedales School, Petersfield. He joined the R.N.A.S. for kite balloon service in May, 1917, served eight months with the Grand Fleet, transferred to aeroplane service in April, 1918, and was expecting to go abroad almost immediately.

KEEPIN.—Sec. Lt. William Frank Keepin, R.A.F., previously



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reported missing and now reported killed, aged 17, was the only surviving son of Mrs. Keepin, of West Wratting, Cambs. As a Boy Scout he receivel a medal for stopping two runaway horses attached to a military wagon at Cambridge, in May, 1916. The same year he became a sub-lieutenant in the Royal Navy, and was engaged in transport work. On April 12th, 1917, he had the experience of being torpedoed and rescued. He subsequently was attached R.N.A.S., and, on joining the R.A.F., was detailed for service at the front.

BIRTH.

WATNEY.—On Sept. 27th, at 10, Thistle Grove, S. Kensington, to Dorothy and Maj. G. J. Watney, R.A.F. (Actg. Staff Paymaster, R.N.), a daughter.

MILITARY.

DEATHS.

DAWSON.—Capt. William Ernest Dawson, R.F.A., attd. R.A.F., who died on Sept. 16th as the result of a flying accident, was the son of Mr. and Mrs. W. F. Dawson, Llantarnam Hall, near Newport, Mon. He was 24 years of age.

GRIFFIN.—Lt. Edward Wiliam Griffin, Gloucester Regt. and R.A.F., who was killed in aerial combat on Sept. 16th, was the only son of Mr. and Mrs. W. T. Griffin, 115, Stamford Hill, N.16. He was 24 years of age.

ENGAGEMENT.

BLOUNT—LEMPRIERE.—The marriage arranged between Lt.-Col. C. H. B. Blount, The Queen's and R.A.F., and Miss Beatrice Lempriere will take place at the church of St. Mary Abbot, Kensington, on Oct. 16th, at 2.30 p.m. Owing to mourning, there will be no reception and no invitations will be sent, but all friends will be welcome at the church.

BIRTHS.

DAVIDSON.—On Sept. 29th, at 3, Halkin Street, Belgrave Square, the wife of Col. E. H. Davidson, O.B.E., M.C., R.A.F. (Gordon Highlanders), of a son.

PILKINGTON.—On Sept. 26th, at The Grove, Gateacre, Liverpool, the wife of Capt. G. L. Pilkington, R.A.F., late Lancs. Hussars, of a daughter.

REYNELL.—On Sept. 20th, at Toronto, to Capt. H. E. Reynell, Black Watch, attd. R.A.F., and Georgie Reynell (née Liddell)—a daughter.

AIR FORCE.

DEATHS.

ALLANSON.—Lt. Wilfred George, R.A.F., who was killed on Sept. 21st, was the second son of Mr. and Mrs. George Allanson, of Belmont, 6, King's Avenue, Clapham Park. He was 20 years of age.

CHURCHER.—Sec. Lt. A. E. C. Churcher, R.A.F., who was killed on Sept. 23rd whilst flying, was the eldest son of Mr. and Mrs. J. A. Churcher, "Carisbrooke," Stubbington Avenue, Portsmouth.

LORD.—Lt. Ernest Owen Lord, R.A.F., who was killed in action on Sept. 18th, was the husband of Doris Lord, 43, Audley Road, Hendon, N.W., and only son of Mr. Edward Lord, Hove, Sussex. He was 24 years of age, and had seen four years' active service.

ROGERSON.—Sec. Lt. Gerald Christie Rogerson, R.A.F., who was killed on Sept. 16th while flying, was the eldest son of Mr. and Mrs. H. P. Rogerson, Bishop's Stortford.

ENGAGEMENTS.

GOSSE—JONES.—The marriage arranged between Lt. Reginald Gosse, R.A.F., and Helen, youngest daughter of Mr. and Mrs. Gordon Jones, will take place on Tuesday, Oct. 15th, at St. Stephen's, Gloucester Road, at 1.30.

HILL—ALEXANDER.—The marriage arranged between Capt. Geoffrey Hill, M.C., R.A.F., and Miss May Alexander will take place quietly, owing to the war, on Thursday, October 10th, at 1 o'clock, at the church of St. Columbkill, Carrickmore, Co. Tyrone.

MAYBURY—KEYES.—An engagement is announced between Major Harry Percy Maybury, R.A.F., only son of Brig.-Gen. H. P. Maybury, C.B., Barnsfield, Greenhithe, Kent, and Evelyn, second daughter of Mr. S. K. Keyes, The Dene, Dartford, Kent.

MARRIAGES.

BOOT—GILBERT.—On Sept. 21st, at Christ Church, Hampstead, Sec. Lt. Clarence Gilbert Boot, R.A.F., eldest son of the late W. F. Boot, R.I., and Mrs. Boot, of Hampstead, was married to Ethel Mary, eldest daughter of the late Mr. and Mrs. W. J. Gilbert, of Derby, by the Vicar, the Rev. T. Brocas Waters.

CROMBIE—MAN.—On Sept. 24th, at St. John's, Paddington, Major Arch. Winter Crombie, R.A.F., only son of Thos. Arch. Crombie, of Chislehurst, was married to Kathleen Dumas, third daughter of Frederick H. D. Man, O.B.E., of 11, Hyde Park Terrace, W., and Bransbury, Barton Stacey, Hants, by the Venerable the Archdeacon of Rochester, assisted by the Rev. H. F. S. Adams, Vicar of the Parish.

ORDISH—MEGGINSON.—On Sept. 24th, at All Saints, Ealing Common, Sec. Lt. Bernard W. A. Ordish, R.A.F., son of Mr. and Mrs. W. J. Ordish, of 19, Richmond Road, Ealing, was married to Phyllis Lucy, daughter of Mr. and Mrs. Wharram Megginson, of 58, Hanger Lane, Ealing, W.5., by the Rev. H. A. West.

SCARAMANGA—BEVAN.—On Sept. 26th, at St. George's, Hanover Square, Capt. G. John Scaramanga, D.F.C., R.A.F., was married to Ursula Constance, younger daughter of Mr. and Mrs. Owen C. Bevan, by the Rev. George Campbell.

WESTENDARP—DE BRAY.—On Sept. 26th, Major O. A. Westendarp, R.A.F., was married to Mrs. Kathleen M. de Bray.

BIRTHS.

BUDGEN.—On Sept. 21st, at Newport, Shropshire, the wife of Maj. W. D. Budgen, attd. R.A.F.—a daughter.

HONNET.—On Sept. 25th, at 34, Albert Road, Regent's Park, the wife of Major F. W. Honnet, R.A.F.—a son.

McCONNEL.—On Sept. 27th, to Capt. F. J. McConnel, R.A.F., and Mrs. McConnel (*née* Wilson), Rose Cottage, Pulham Market, Norfolk—a son (Eric Carmel).

WARD.—On Sept. 12st, at Farnham Common, the wife of Capt. Herbert Ward, R.A.F.—a daughter.

FOREIGN COMMUNIQUES.

FRANCE.

SEPT. 25th.—The weather having improved, it has been possible to resume operations in the air, which had been temporarily interrupted owing to the bad weather conditions prevailing during the preceding days.

Nine machines were brought down or put out of action, and one captive balloon was set on fire.

Our reconnoitring machines have explored the enemy front and brought back numerous photographs. During the night five tons of projectiles were dropped on the railway stations of Longuyon and Marie Baraucourt. Several hits were observed on these stations, where both fires and explosions occurred.

SEPT. 25th.—ARMY OF THE ORIENT.—The pursuit continues on the whole front from Monastir to Veles.

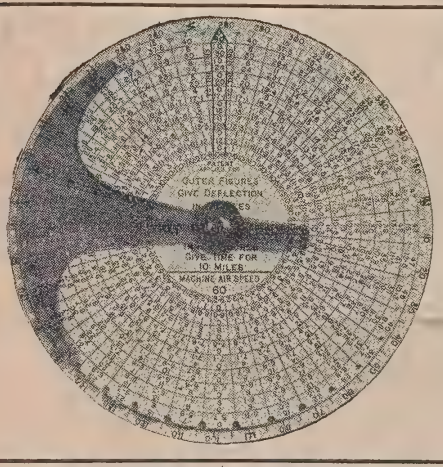
At Krivolak the Serbians, besides the booty already reported, captured some new aeroplanes and motor-cars, as well as big petrol and food dumps.

SEPT. 26th.—During the day of the 25th five enemy aeroplanes were brought down or put out of action.

During the night bombarding aeroplanes dropped over 21 tons of bombs on bivouacs in the region of Laon and railway stations and dumps, particularly on the stations of Mont Cornet, Marle, and Laon, and on the railway lines leading to those places. Numerous hits on the targets, which caused fires and explosions, were observed.

SEPT. 27th.—During the daytime of the 26th the fine weather enabled our Air Service to employ all the means at its disposal to co-operate in the battle.

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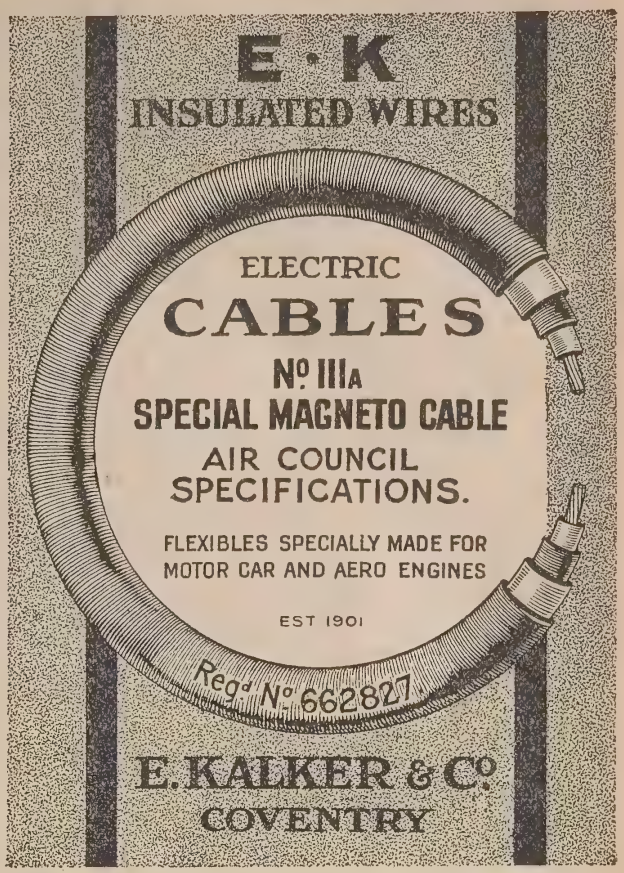
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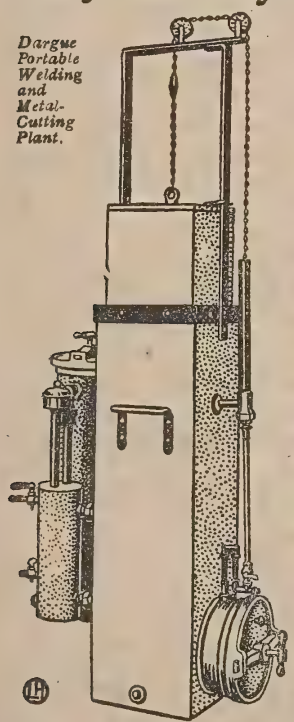
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German lines, and by the many photographs secured, our reconnoitring patrols kept Headquarters effectively informed of all movements of enemy troops and convoys, and activity on his principal railways.

Our bombers, profiting by the information thus secured, dropped during the daytime 26 tons of projectiles in the rear zone of the battle and, in particular, on the crossings of the Alin (north of Tahure), and in the region of Somme-Py.

During the night the work of our bombers was continued with equal vigour. A total of 23½ tons of bombs was dropped on enemy cantonments and bivouacs in the rear of the front, on enemy aviation grounds and railway stations, and particularly on those of Laon, Longuyon, Le Châtelet, and Amagne. Several fires occurred as a result.

Finally, our fighting planes, by their vigorous action, rendered observation on the part of the enemy air service almost impossible, and achieved very great success. Forty-two enemy machines were brought down or put out of action, and seven captive balloons were set on fire in the course of the day.

Sept. 28th.—During the day of the 27th our aviators continued to take an active part in the battle. Our bombing squadrons by means of their expeditions both by day and by night have not ceased to harass enemy troop transports and to attack enemy convoys. Twenty-five tons of projectiles have been dropped behind the battle front, notably to the north of the Somme-Py-Challerange railway, on the important centres of the Medech Farm and of Ardeuil, and on the passages of the Alin.

During the night the railway stations of Longuyon and Audun-le-Roman and the aviation ground of Stenay were copiously bombed. Our crews brought down nine German machines and set one captive balloon on fire.

Lt. Fonck brought down six enemy machines during the 26th.

Sept. 29th.—In spite of the very bad weather, our air service during the day of Sept. 28th performed important work. Intervening directly in the battle, it bombarded and machine-gunned the troops.

Twice groups of over 50 aeroplanes attacked the enemy's reserves, which had been prepared for a counter-attack in the ravines of Marvaux and Liry. Twenty tons of bombs were dropped and several thousands of rounds fired on these troops.

During the day 15 enemy aeroplanes were shot down or driven down out of control, and three captive balloons set on fire.

Sept. 30th.—During the day of Sept. 29th the mists and overcast sky have not prevented our air service from carrying out work.

In the course of fights, in which they retained their ascendancy over the enemy, our crews brought down or put out of action 25 German machines, and set two captive balloons on fire.

Our bombarding squadrons, despite the low visibility, successfully executed several operations by low flying over their objectives.

Twenty-six tons of bombs were dropped on enemy convoys and concentrations in the battle zone, notably on Challerange, Liry, and Mount St. Martin, and some thousands of cartridges were fired at German troops in action. For their part our observation squadrons carried out numerous spotting expeditions, and accomplished several reconnaissances far into the enemy's line.

ITALY.

Sept. 25th.—An enemy aeroplane was brought down in air fighting.

Sept. 27th.—Numerous cruising reconnaissances and bombardment flights were made. Three enemy aeroplanes were forced to land in their lines.

Sept. 28th.—An enemy plane was brought down in air fighting.

Sept. 29th.—Two enemy planes were brought down in air fighting.

British aeroplanes on Sept. 21st bombed the enemy's lines on the Albanian front and the hangar at Ragozzina. Italian aeroplanes bombed Durazzo on Sept. 22nd and 27th.

GERMANY.

Sept. 25th.—The enemy gained a footing in Pontruet, Gricourt, and Francilly-Selency in the early morning. Counter-thrusts delivered by our infantry and pioneers, effectively supported by artillery and aviators, again brought Pontruet and Gricourt into our possession towards the afternoon.

Yesterday we brought down in aerial battles 28 enemy aeroplanes and six captive balloons. Lt. Rumey achieved his 42nd aerial victory, and Lt. Jakobs his 30th.

Sept. 25th.—Lt. Rumey achieved his 41st aerial victory.

Sept. 26th.—Seven aeroplanes were shot down out of enemy squadrons which attacked Frankfurt and Kaiserslautern.

Sept. 28th.—Yesterday we shot down 33 enemy aeroplanes. Lt. Rumey achieved his 45th aerial victory.

Sept. 29th.—Yesterday we shot down 32 enemy aeroplanes and three captive balloons.

Sept. 29th.—Yesterday we shot down 45 aeroplanes of the enemy.

U.S.A.

Sept. 28th.—American aviators (on the Argonne front) have kept command of the air.—They have brought down 12 balloons and more than 60 enemy planes, while less than a third of that number of our planes are missing. In conjunction with French and British aviators they have, notwithstanding unfavourable weather, rendered valuable service and successfully executed many missions.

BELGIUM.

Sept. 27th.—On Sept. 27th two enemy balloons were brought down in flames by our aviators. One of them was brought down by Lt. Coppens, who thus achieved his 31st victory.

SERVIA.

Sept. 26th.—On the 24th instant Servian troops obtained very important success on the left bank of the Vardar River. Our aviation has bombarded very efficaciously with machine-guns the retreating enemy troops.

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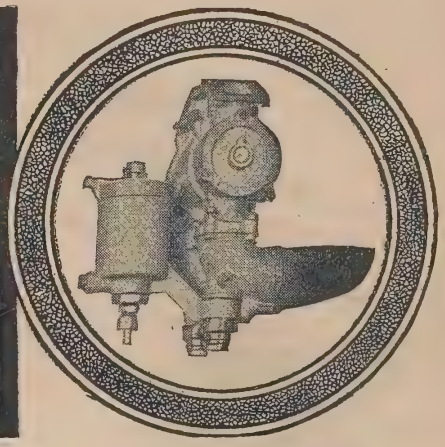
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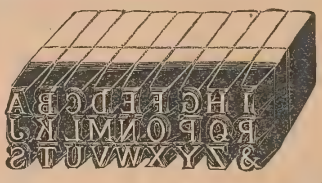
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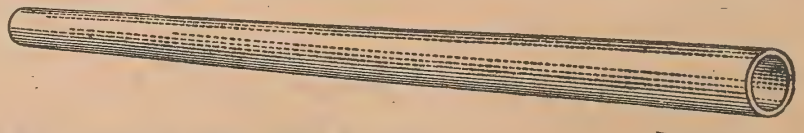


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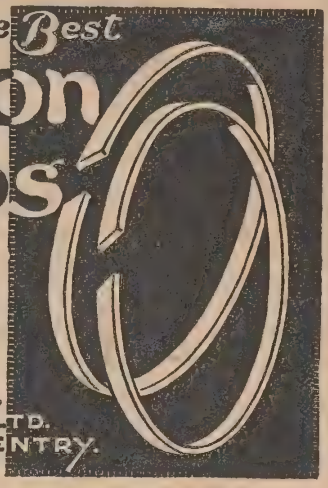
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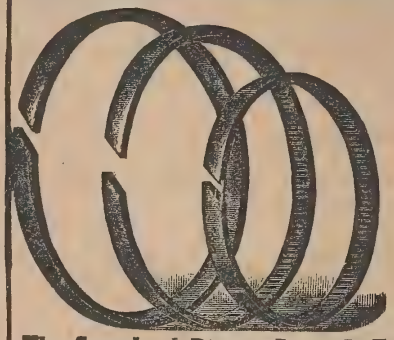
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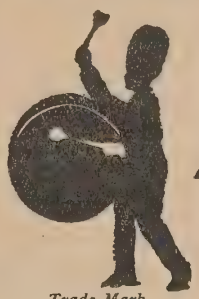


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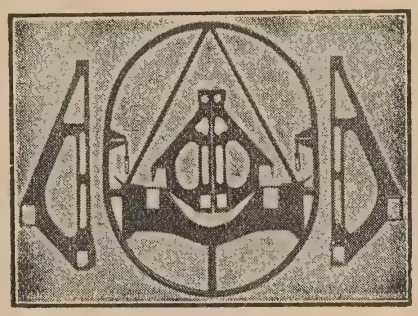
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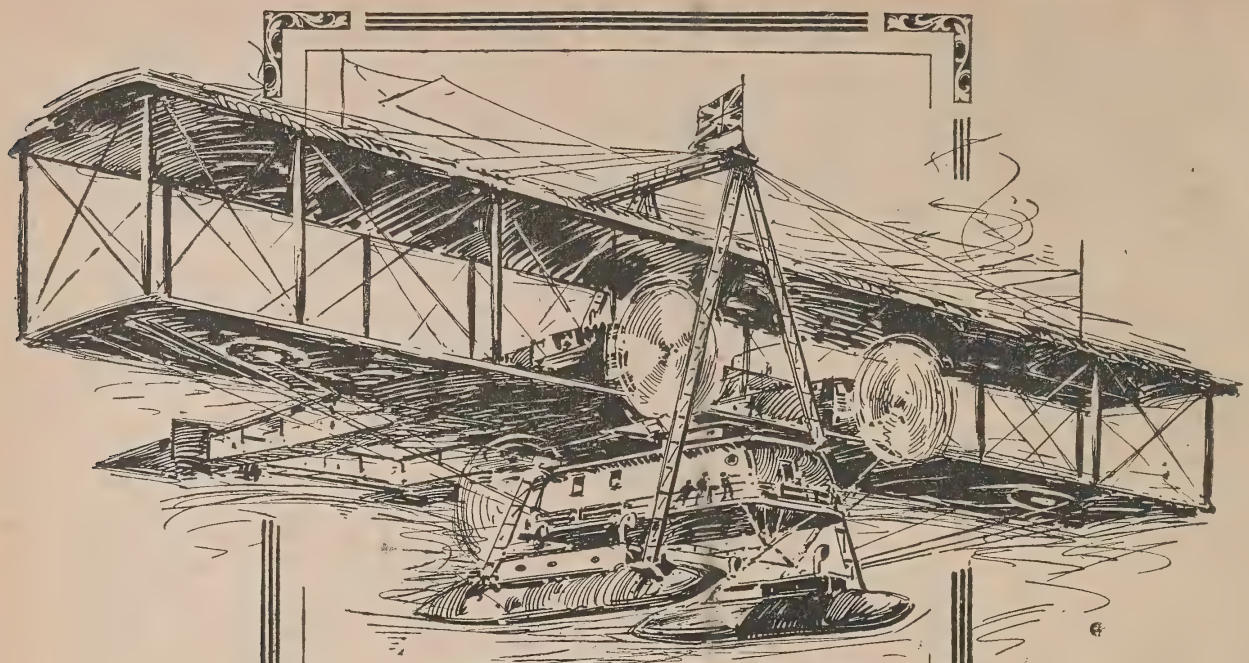
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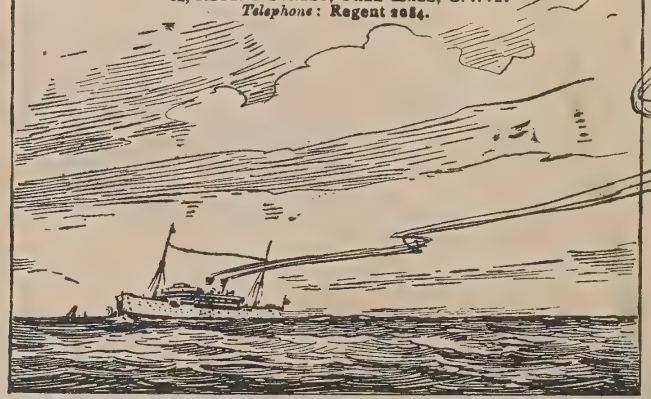
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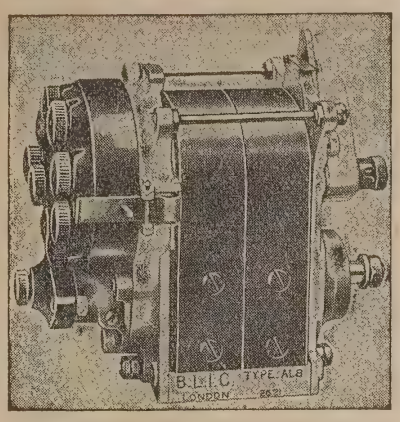
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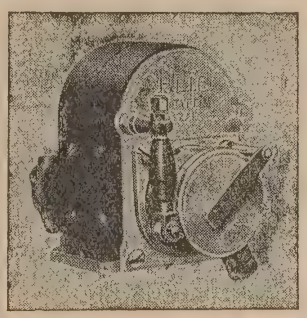
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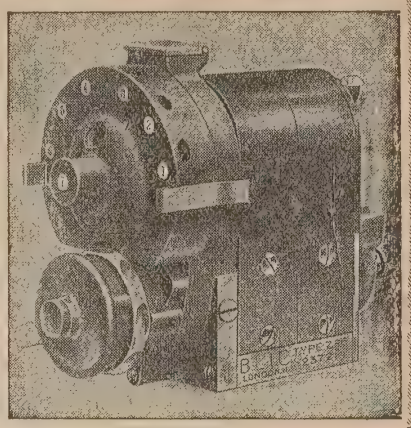
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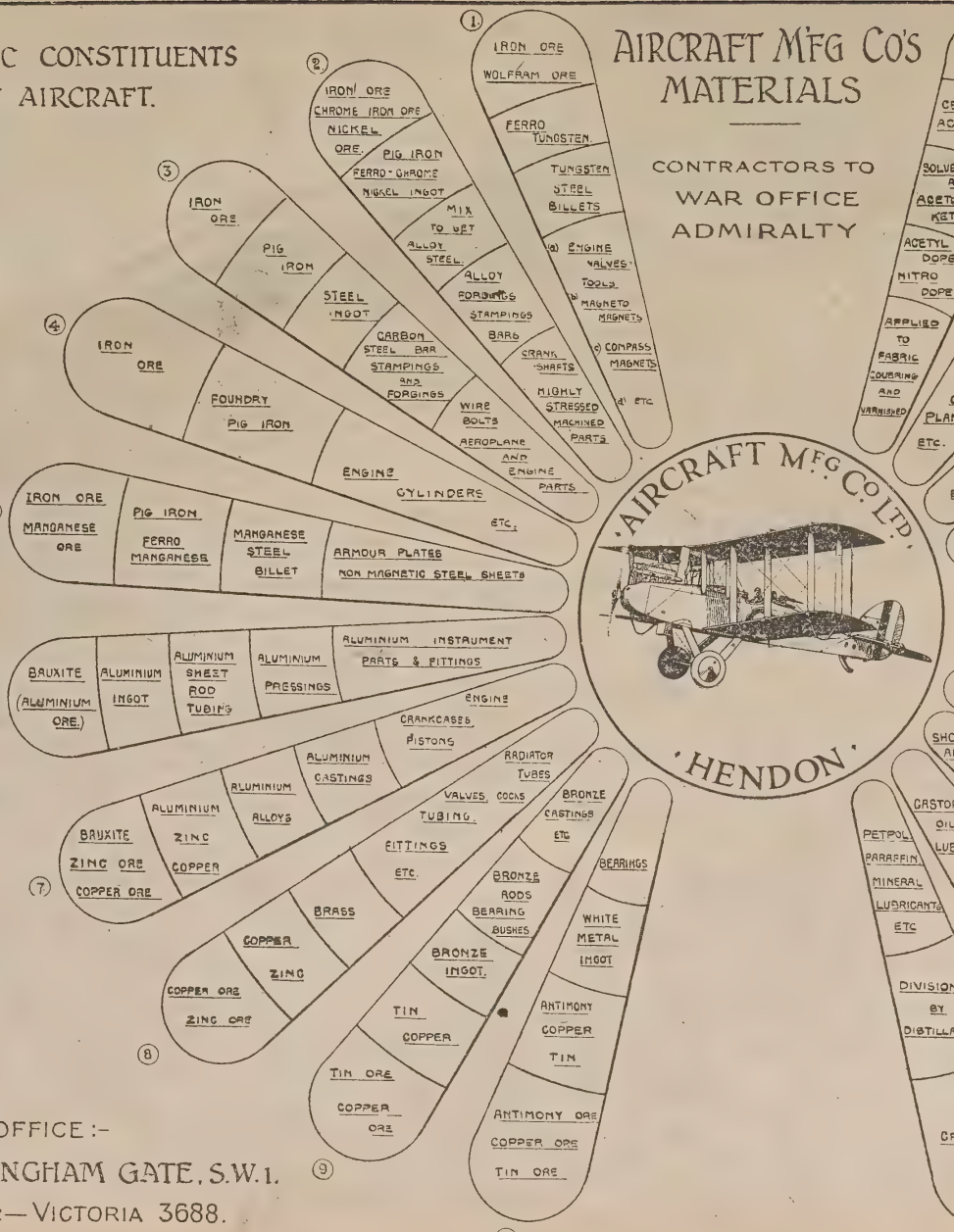

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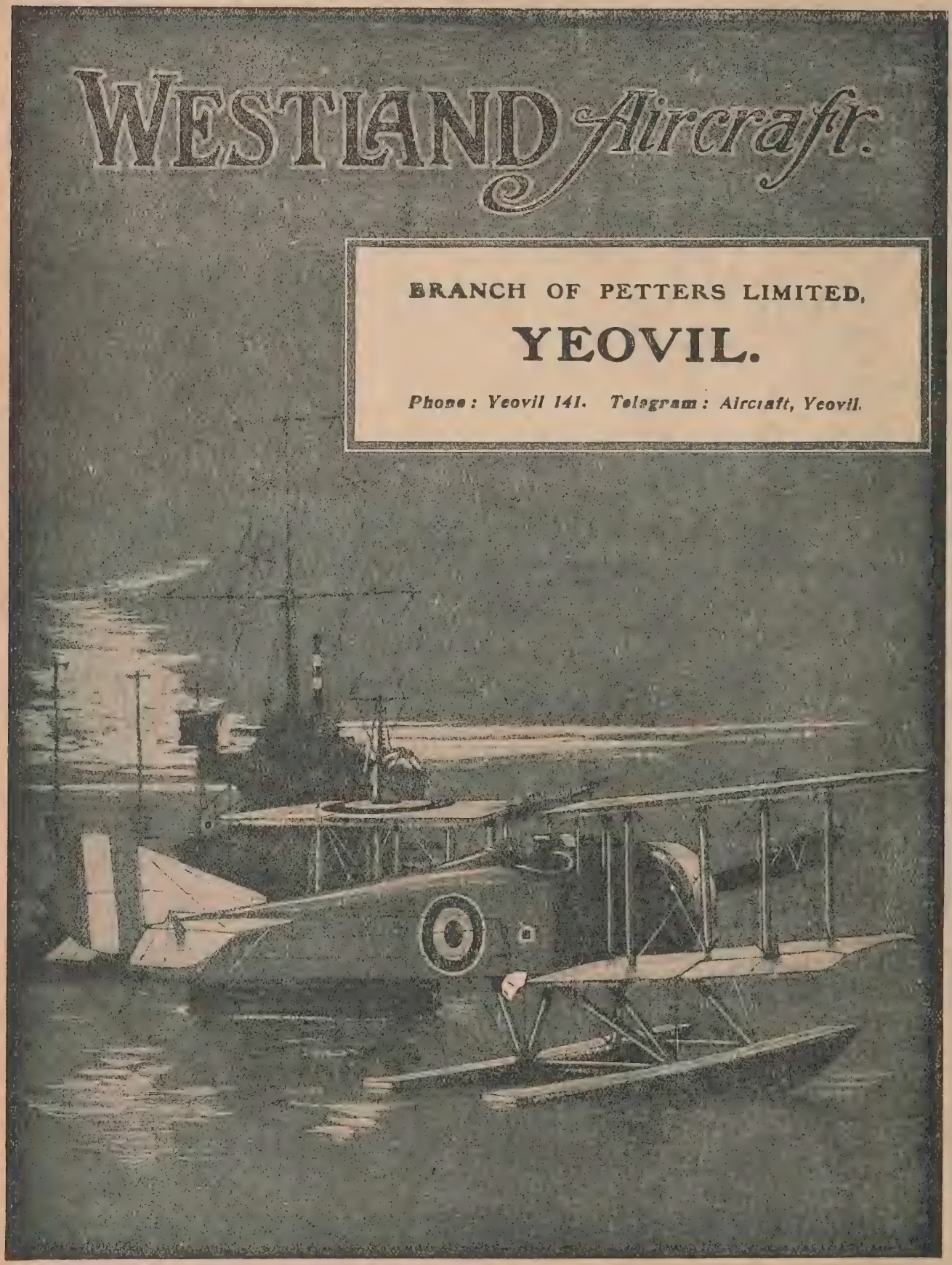
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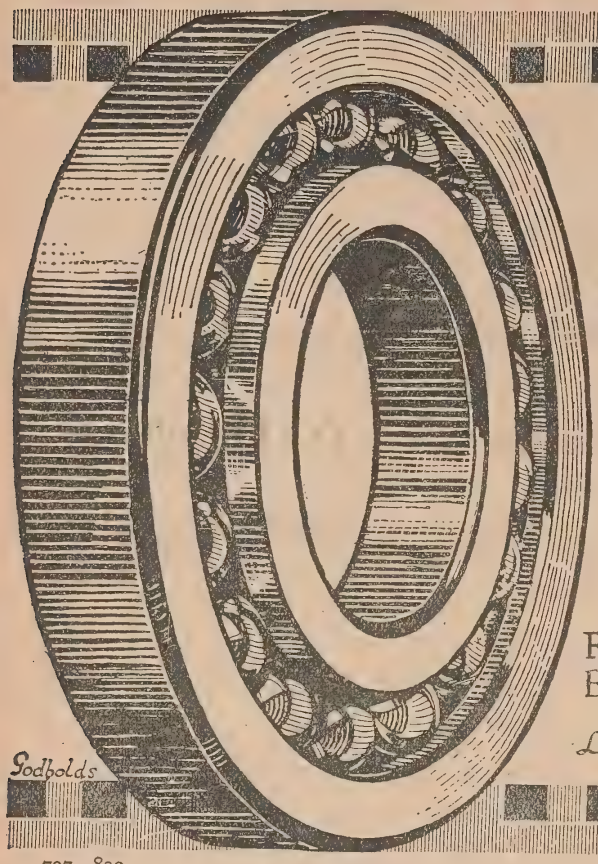
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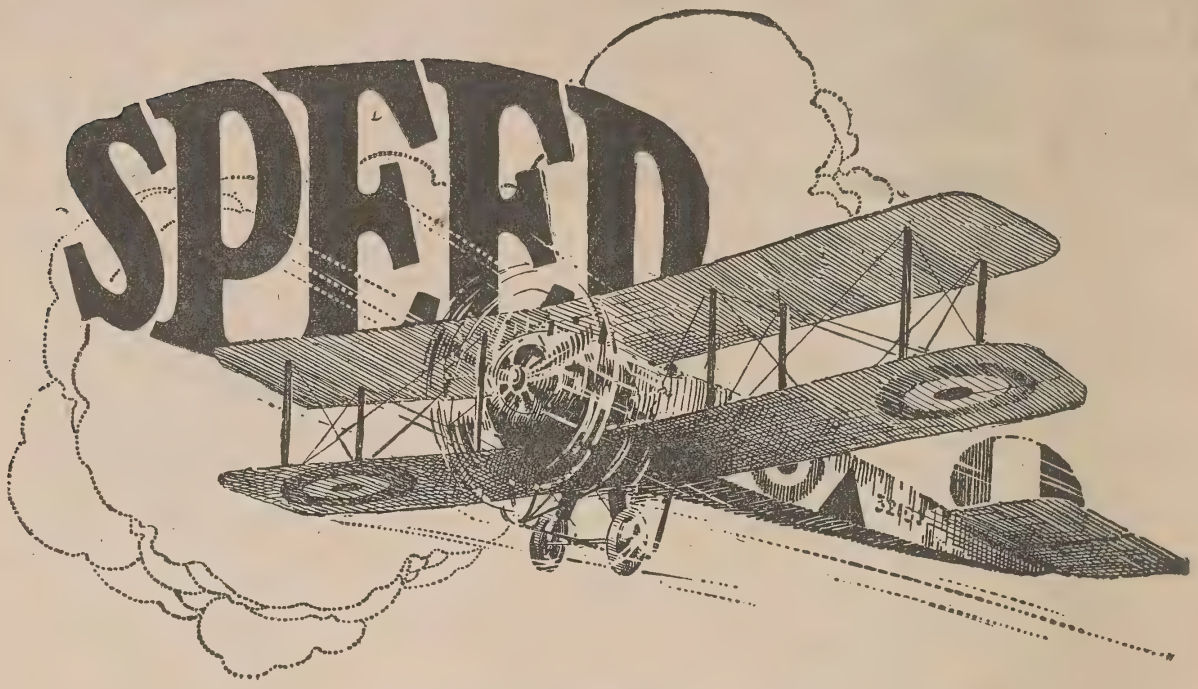
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Indubitably inventors are a nuisance, quite as much to themselves as to anybody else. If it had not been for inventors we should have been fighting the Hun with sticks and stones and our bare hands, instead of with gas and guns and tanks and telephones and aeroplanes and such things, and the best *man* would win, instead of the man most quickly equipped with the best inventions.

When once inventions are imported into war one bumps up against a fact which makes inventions and inventors more of a nuisance than they are by nature, namely that the man who does the fighting is not the man who chooses the invention with which he has to fight. The choosing, or selection, or supply, or equipment, or whichever of the terms by which one has to call the act of handing over the invention to the fighting man, is done by a Government Department which suffers almost invariably from two disabilities: in the first place it never seems to know what the fighting man really wants, and in the second place it is equally delightfully ignorant as to what the invention in question can really do.

Any given country may have the finest inventions in the world, and yet, if it has either a stupid or a dishonest supply department, its fighting men may be left without the benefit of those inventions. One would never, of course, accuse any English Government Department of being dishonest—our National Nonconformist Conscience is far too strong for us to admit such a possibility—but it is evident that some of our Departments are monumentally stupid. For example, one cannot account by any other means (except that unthinkable explanation, sheer dishonesty) for the fact that the particular type of Tank introduced by Mr. MacFie to certain Departments in the Autumn of 1914 only came into action for the first time at the Battle of the Somme in the Autumn of 1916, or for the fact that the "one-and-a-half-strut" Sopwith biplane which beat British records in July of 1915 also only came into action for the first time on the Somme in the Autumn of 1916, and then only to the extent of two squadrons.

One could multiply such cases of stupidity (of course there is no dishonesty about them) to an almost unlimited extent. For example, there are cases which are common knowledge to-day in circles where practical flying people and genuine aeronautical engineers meet and talk. There are at least three engines which ought to be in quantity production and are not. There are at least three aeroplanes which also ought to be in quantity production and are not. There is the scandalous business of the so-called "standard dope." And if anyone is honestly anxious to find other cases of official stupidity (of course there are no cases of dishonesty) they can be discovered almost everywhere, from the smallest sub-contractor upwards, merely by luring someone who knows into a little confidential chat.

The inventor is the man who is primarily to blame, for if he would only refrain from inventing things there would be nothing about which officials could be stupid. In fact there would be no more work for supply departments to do, and so all the officials of those departments would just have to go and fight with sticks and stones and their bare hands as their ancestors the anthropoid apes did before them. And thus, by refraining from inventing, inventors would be conferring a double benefit, in that they would remove one nuisance in themselves and another in the officials who at present prevent their inventions from being supplied to the fighting man when he wants them.

A Popular Delusion.

Some people, Mr. H. G. Wells prominently among them, seem to have a foolish idea that all our modern inventions have made war more terrible. How on earth this notion ever attained currency passeth all understanding. For instance, is poison gas to-day half as effective as was the smoking out of a hostile tribelet—men, women, and children alike—who had concealed themselves in a cave some thousands of years ago? Is a clip on the head from a shell splinter any worse than a wipe with a stone axe? Is a fall of 10,000 feet in a smashed-up aeroplane any worse than a fall of 300 feet after being chucked over a cliff by a stronger fighting man? Is it any worse to be squashed by a tank than by a boulder rolled down a mountain-side?

Has the percentage of casualties in any battle in this war been as high as the percentage at the Battle of Cannæ? Has the spoliation of Belgium, or Roumania, or even Servia, been greater than the clearing out of Palestine when "the Assyrian came down like a wolf on the fold," and at various other times? Is the carrying away of people from territories occupied by the Germans any different from the days when the Israelites "sat down and wept" by the waters of Babylon, or when our good King James depopulated the County Monaghan to plant it with Scots, or when one of our good Kings George depopulated the Castleisland district to fill it with Blennerhassets and Pomeroys and such-like folk from the Palatine Provinces of the Rhine?

War is, in fact, very much less terrible than it used to be, except for small nations who happen to be in the line of march of the bigger nations, and obviously, if the small nations were wise, they would join up with their biggest neighbours in self-defence. Which is the only sensible form of League of Nations.

The inventor certainly is a nuisance when he invents new forms of frightfulness, but he has his compensations when he invents antidotes to his own frightfulness. And yet one is not so sure that this is true, for if no antidotes were invented the nation which produced the most frightfulness would inevitably win, and so would conquer the rest of the world, and thus we should arrive at

perfect peace, and the only League of Nations which could hope to endure for any length of time.

A Praiseworthy Effort.

Anyhow, the inventor, like the poor, is always with us, and the only sensible thing to do with him, short of executing him wholesale, is to use him to the best advantage. Which is precisely what we in this country in particular do not do.

Certainly, so far as aeronautical affairs are concerned, we make some show of giving the inventor a fair chance. The Air Inventions Committee, for example, is doing excellent work. It has encouraged many clever young men to develop embryo ideas, and it has enabled many sound theories to be put into practice by having new things constructed at the Nation's expense when the inventor himself could not afford to make them.

The Committee's patience seems inexhaustible, and the number of courteous letters which it has sent out to wild and woolly-brained inventors telling them that their communication "does not add to the information already in the possession of the Committee" must be an appreciable drain on the Nation's paper supplies. Personally one would feel inclined, in thousands of the cases with which it has to deal, merely to quote Mr. George Robey and write "Shurrup" on the smallest postcard permitted by the Post Office Regulations.

Where Trouble Begins.

The worst troubles apparently begin after the Air Inventions Committee has done its best for the inventor, or after the intelligent manufacturer has allowed his tame designer to patent an idea and have it made, or after the private inventor has actually perfected his invention and is prepared to have it manufactured in quantities. It is only when the job is ready for use that the inventor or his backer comes up against the maze of Departments which seemingly exist for the express purpose of preventing his invention or his design from reaching the fighting man.

The Technical Department may approve, but Supplies may disapprove. Both T.D. and Supplies may approve, but Equipment may not like it. Or the fullest practical tests at all the T.D. establishments may prove that the invention or design is far ahead of anything existing, and yet it may be turned down on purely theoretical grounds by one or other of the assorted Design Departments. Or Designs may approve, and it may be turned down owing to a practical test being messed up by an incompetent or cocksure Government tester.

There seems to be no one Department, let alone any one individual, whose job it is to say definitely that such and such a machine, or engine, or gun, or fitting, shall or shall not go into production.

Wanted: The Man.

If such an individual existed he would have to take big responsibilities, but one does not believe that the country which produces generals who are not afraid to throw hundreds of thousands of men into a great attack is devoid of men with the moral courage to order a few thousands, or a few hundreds of thousands, of pounds to be spent on putting a useful invention into production without all the waste of time and lives involved under existing systems.

In the days when Lord Weir was Sir William and had Production in his own hands he did not hesitate to give sweeping orders to produce, and we see the result to-day in the comparative supremacy of the R.A.F. in the air. As Secretary of State for the Air Force, Lord Weir has his hands full of other things besides Production, so it is not his affair to attend to details or to decide whether this or that engine or aeroplane or gun shall or shall not be produced.

Sir Arthur Duckham, the new chief of Production, is thoroughly sound, and will make things move when he knows a little more of the details of his job, but at present—so one judges—he is like Brer Fox and "lays low and says nuffin'." Meantime things which ought to have been not merely in production but in use on active service months ago are being hung up by stupidity (one would not think of suggesting dishonesty) among the officials of the minor Departments under him.

The Official Failing.

The trouble with these officials seems to be that they have too much faith in the products of vested interests. If a firm is a big firm and if its chiefs are in favour in high places, therefore its products must be good. That seems to be the doctrine of the minor official. It is a fairly safe doctrine, for if the product turns out to be bad, the minor official has plenty of tall timber to which he can retreat.

But steady adherence to this doctrine results in barring new designs by firms which have come along since those vested interests made good in the early days. There comes a time when inventive brains run dry of ideas and it is then necessary to look for new and fresher brains if improvements are still desired.

The Hun seemed to have run dry some months ago, but one now hears of a new German monoplane of considerable performance which has made its appearance on the West Front. Good as it may be, it cannot possibly be as good as certain machines which exist in this country. The question is, how long are Sir Arthur Duckham's subordinates going to keep those machines in this country instead of sending them out to abolish that Hun monoplane?

Another Obstruction.

Quite another form of obstruction to new ideas is that of the Department or sub-Department which insists on doing its own inventing or designing. Throughout the war we have seen the dire calamitousness of putting trust in official designs.

We saw the long and disastrous series of B.Es. and R.Es.—They say that the R.E.8 is now called the "H'R.E.T'8."—We saw the famous No 1,000 seaplane, which beat anything that the combined brains of Mr. Harry Tate and Mr. Heath Robinson could conceive. We saw the "Jabberwock" gun-mounting, and an infinite procession of other official futilities. And yet we allow Departments which try to do their own designing to act as judges of the designs of others.

If the High Officials of the Air Ministry want examples they can have them. One of the worst difficulties of the war is the fact that one cannot quote in print chapter and verse for cases at which one can only hint. One cannot be more specific without giving information to the enemy, and yet if one could only publish details of these cases one believes that the ensuing results would be of greater value to this country than the information disclosed would be to the enemy.

Still, we are steadily improving.

The National Art: Wangling.

One of the tests of the competence of an inventor seems to be his ability to overcome official obstacles. It is not enough merely to invent an article and make it. The competent man must also know how to wangle it into production. The fell incubus of Bureaucracy which has fallen upon this country has turned us into a complete nation of wanglers. We spend as much time wangling round official regulations and prohibitions and obstructions as we do in getting along with our jobs.

There is practically no act of our daily life which is not an offence against the Defence of the Realm Regulations, if strictly interpreted, and certainly there is no way in which one can deal with a Government Department without wangling round some regulation or other. Therefore the inventor who hopes to be a success must educate himself in the art of wangling.

Frontal attacks are no more use against officialdom than they are against the enemy in the field. Before the coming of the Air Ministry, the inventor who had a really good thing which he wanted the R.F.C. to adopt wangled round the R.F.C. Supply people by offering it to the R.N.A.S. If the R.N.A.S. turned it down, that was *prima facie* evidence to the technical "experts" of the R.F.C. that it must be good, and so they jumped at it. And *vice versa*. To-day the removal of competition, owing to the amalgamation of the two Services, makes things more difficult. But we have twenty-two (or is it twenty-three?) Allies, so there is still scope for the competent wangler.

The Service Inventor's Reward

Finally, as to the reward of the inventor—for though he is a nuisance, he does sometimes deserve reward. The inventor or designer who is his own master has his own reward in the proceeds of his invention. The inventor who is employed by a manufacturer is only up against a plain business proposition. But the inventor who is in the King's Service deserves better treatment than he gets at present.

According to King's Regulations, all inventions by an officer or man in the Services are the property of the Nation, and though the inventor may receive a gratuity he has no definite claim to anything. In the case of the permanent service man this is fairly reasonable, for he is paid and kept by the Nation and draws a pension for life after he leaves. But the temporary officer or man is in a different boat altogether. When he leaves the Service after the war he gets no pension, and he gets nothing out of his invention.

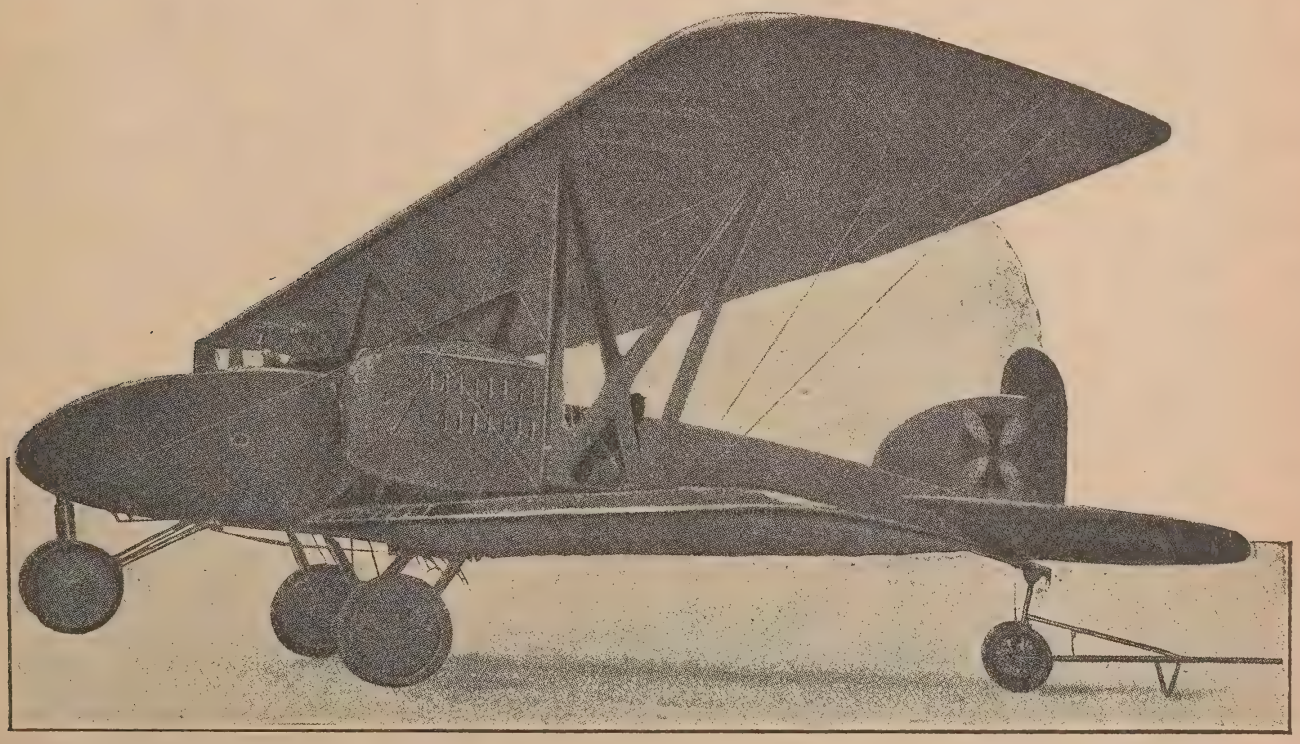
This is an injustice which should be put right at once. A temporary officer or airman in the Royal Air Force should be allowed to take out his patent or register his design as a civilian, and should be allowed to negotiate for sales or royalties either with manufacturers or with the Government accordingly. Then if his idea should be turned down by the Department with which he has to deal he can offer the invention to any firm in that line of business.

This also ensures the junior officer or man against having his ideas stolen, or the credit for them appropriated, by his superiors. Also it prevents a Department from blocking the progress of a useful new design while it tries to develop an inferior design of its own. Such things have happened.

In any case, the temporary officer or man ought to be treated, so far as his inventions are concerned, as a civilian. If this were once made a regulation the Air Force would benefit immensely, for it would then be worth the while of many hundreds, possibly thousands, of clever young men now in the King's Service, to work out ideas which are now lying idle merely because there is no reward to be obtained by working on them. One commends the suggestion to the Air Ministry.

The Great Secret.

Meantime, the most important thing of all is to speed up the production of good things which already exist and are being held back by the stupidity or jealousy (which is not the same thing as dishonesty) of minor officials. If Sir Arthur Duckham realises, as he very probably does, that very many of the people in the numerous Departments under him are only in Government employment because no sensible manufacturing firm would be bothered with them, he will have made an important step towards the solution of the various problems which exist between the perfection of an invention, its going into production, and its coming into use on active service.—C. G. G.



AN ALBATROS BOMBER. An attempt by the famous Albatros Company to produce a twin-engined bomber. The combination of Gotha general arrangement with the familiar clean-cut Albatros features is of interest.

R.A.F. FASHION NOTES.—IV.

Most of the orders relating to the wearing of R.A.F. khaki or Bolo blue uniforms having been cancelled, it seems that officers may wear what they damn-well please until Oct. 31st, when it is hoped that gents' winter suitings of the new standard cloths will be available. It is then considered possible that the G.O.C. Sartorial Strategy Directorate will be able to make up his mind about something or other. Meantime it is not regarded as good taste in the R.A.F. to wear a field-service jacket of black and white shepherd's plaid with breeches of Stuart tartan.

Great-coats of Bolo blue should not be worn at the seaside, over bathing-dresses or otherwise. The sealed-pattern R.A.F. great-coat will probably be decided by the G.O.C. S.S. Directorate in time for next summer. During the winter tarpaulin boiler-suits are strongly recommended as a substitute, but care should be taken to have these fitted with regulation rimless Bolo buttons. The frazzled edge of the old R.A.F. button is liable to destroy the button-holes and lead to unseemly disclosures.

If and when great-coats of any kind are worn, the pockets should not be used as week-end suit-cases, nor should beverages—even when procurable—be carried therein. This custom destroys the officially desired *svelte* contours of the R.A.F. officer and leads to ribald remarks from the personnel of the older if obviously inferior Services. When extra transportation facilities are required carpet-bags or string-bags should be acquired for the purpose.

As the G.O.C. S.S. Directorate has not yet decided whether black or blue or khaki socks are the correct wear, officers are recommended to purchase hose of the National colours. Several neat lines in gents' winter sockings are on view at the *atelier* of Messrs. Barabbas and Turpin in the Piccadillington Arcade. One particularly chaste design in which the centre of the Union Jack comes precisely over the tongue of the shoe, where it bears the R.A.F. badge in Bolo blue silk, should meet with a delirious sale. Worn with dancing pumps when wooing Terpsichore in public places—with the consent of Sir Francis Lloyd—they are guaranteed to create a sensation among the fair sex and to deflect the steering of the wearer's rivals in the inferior Services. Purchasers of this line of goods are recommended to take a double reef in the legs of their slacks so as to give the full artistic value to their decorative hose.

Though the regulation pattern of collar and tie has not been definitely fixed, it is believed that a Departmental Committee, under the chairmanship of the President of the Rugby Union—our leading authority on collaring—is now sitting on the question. If left strictly undisturbed for at least three months it is hoped that something may be hatched out. Meantime red silk handkerchiefs or red worsted scarves should not be worn in lieu. In artistic R.A.F. circles they are considered "damn-sloppy"—at least, so I am informed, though the phrase is unfamiliar to me in my readings of art critiques. Meantime, almost any old pattern of collar can be worn. The type familiarised by the late Mr. Gladstone is not recommended, nor is that technically known as the Shakespeare. The low-necked soft collar with large butterfly bow is also to be avoided, for, although popular among artists, it is also largely worn by Conscientious Objectors, and the erroneous inferences which might be drawn therefrom might be obnoxious to any but the regular residents of the Hotel Bolo.

It is generally considered bad form to wear the hands in the pockets of one's own trousers or vest. When suffering from temporary financial stringency it is occasionally helpful to place them in the pockets of some otherbody, but it should not be done even then in such a manner as to attract attention, as such a solecism is liable to reflect deleteriously on the smartness of the Air Force. In cold weather, as no sealed-pattern great-coat has been adopted, the hands should be worn in an astrakhan muff, which may be suspended from the neck by a platinum chain. The R.A.F. cap-badge worked in gold on the front of the muff makes a pleasing addition to the *toute ensemble*. The cost of the muff complete with chain and badge is not much more than a couple of hundred guineas, and would be several guineas less but for the shortage of skins from Russia, where our gallant ex-Allies, the Bolsheviks, are reduced to eating astrakans, skins and all, owing to our churlish refusal to split our meat-rations with them.

At 200 guineas or so the muff is well within the reach of any flying officer of the R.A.F., and as it is a necessity—owing to the lack of an official overcoat—it is not subject to the luxury tax. It is, perhaps, a trifle expensive for stores-officers and administrative second lieutenants. For them and other poverty-stricken persons I hear that a special line in R.A.F. muffs is being produced by Messrs. Dunham and Squeezer, of Coney Island, New York State, where the rabbits are specially bred for the purpose of producing imitation astrakhan. A pair of curling tongs is presented with each muff, so that after a spell of damp weather the artistic verisimilitude of the fur may be preserved. The whole outfit is retailed, complete with a spirit-lamp specially designed to burn Government petrol, at the absurdly low price of 23½ guineas. It was originally intended to market the article at 20 guineas, but the rise in the price of paper has naturally increased the cost of packing. There is, therefore, no excuse for even the most junior officer not to look smart during the winter.

Unfortunately the G.O.C. Directorate of Sartorial Strategy has not yet had time to decide upon the regulation shirt to be worn either with Bolo blue or R.A.F. khaki. Officers possessing blue silk pyjamas can produce a very neat effect by cutting off the collar of the pyjama jacket and pinning an ordinary white wing collar to the jagged edge. This should not be worn with the khaki uniform.

It is hoped on the best authority that black shirts will ultimately become regulation wear. They have the advantage of not needing washing and so can be worn threadbare without the assistance of the modern laundry. Should they ultimately become the permanent pattern it will not be considered the right thing to wear black-enamelled aluminium dickies in lieu of the regulation shirt. A black shirt and collar worn without a tie, and with studs consisting of the R.A.F. monogram in diamonds will have a very smart effect, and will certainly prevent the wearer from being mistaken for an officer in any other of the King's Armed Forces.

En passant, a persistently current rumour says that a select Departmental Committee consisting of those famous sartorial artists, Mr. Harry Tate, Mr. Heath Robinson, and Signor Comelli has been appointed to consider the question of re-designing the whole R.A.F. uniform, and that Mr. Pemberton Billing, M.P., has been asked to give expert evidence as to the possibility of getting all their ideas into one uniform. Mesdames Gaby Deslys and Ethel Levey are said to be engaged in collaboration on the design of an entirely new R.A.F. headgear. It is also said that the laboratory of British Dyes, Ltd.—which firm as you know recently secured all the discovered and undiscovered secrets of the Hun dyers—was seriously damaged the other day by an explosion caused by its whole staff of expert chemists concocting together a dye which they promised would exceed Bolo blue in frightfulness.—C.G.G.

WHAT LONDON THINKS.

The writer who signs himself "The Onlooker," in his contribution to "London Opinion" dated Oct. 12th, says :—

I hear that Mr. Winston Churchill has lately taken to flying again with all the keenness which he used to show when he was First Lord of the Admiralty. He has made several trips to France by air recently, and when he wants to get anywhere in Great Britain in a hurry he goes by aeroplane.

Not only Mr. Churchill, but several other high officials have also become enthusiastic aviators. Sir Arthur Duckham, the Controller of Aircraft Supplies in the Ministry of Munitions, among others, has also been to France and elsewhere by air on several occasions. I am told that a special detachment of R.A.F. machines, with picked pilots, is kept constantly in readiness at an aerodrome near London for the conveyance of Government officials. This makes the prospects for civil aerial transport after the war considerably brighter.

Apropos official visits to France, I am told that while in Paris recently a Cabinet Minister and several of his staff paid a special visit to one of the most important French aerodromes to watch a series of tests of a new aeroplane and engine which have taken the French aviation world by storm with their wonderful performances. The British visitors were greatly impressed But they were still more surprised when they learned that both the aeroplane and the engine were of British design and make, and had been in existence on this side of the Channel for eight months without being able to obtain official recognition.

["The Onlooker" is generally exceptionally well informed on aerial matters, and, barring the fact that he seems to have mixed up the minor department of Aircraft Supplies with the all-inclusive Department of Aircraft Production, he seems to have got pretty near the mark on this occasion.

His last paragraph is of particular interest. It is astounding how even the most important personages have to go abroad to discover the truth about things at home. Some of these so-called technical people seem to be not merely blinder than bats, but seem to ignore even the A.B.C. of their business.—Ed.]

ANOTHER MINISTERIAL JOY-RIDE.

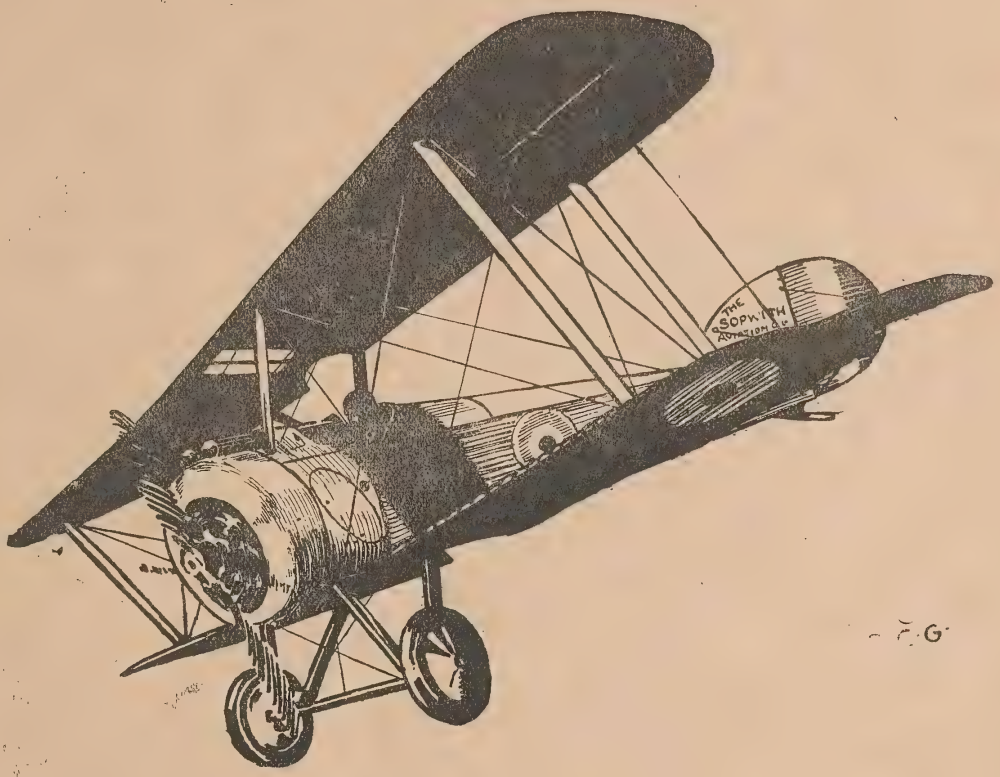
According to the "Daily Express" of Oct. 8th, when Mr. Bonar Law recently paid a visit to France he made the journey by aeroplane, landing safely at his destination.

R.N.A.F.

Royal Air Force contingents operating with the Navy have continually carried out bombing expeditions on Zeebrugge, Bruges Dock, Ostend, and the enemy aerodromes. The German defence is improving, but the difficulties are not insurmountable, and our aviators have been able to reach and bomb their objectives. We have lost several machines during the course of these raids, but this is a small loss as compared with the results achieved by the bombing.

During the first fortnight in August our bombing squadrons dropped about 77 tons of bombs on various objectives in spite of bad weather. Night bombing was only possible on five occasions from Aug. 16th to Sept. 16th, but the total weight of bombs dropped during daylight and night raids from Aug. 1st to Sept. 16th was about 158 tons.

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OFFICERS' DEPENDENTS.

The Secretary of the War Office made the following announcement on Oct. 1st :—

Owing to the not infrequent omission on the part of officers to make proper arrangements by which their dependents can draw on their accounts or receive an allocation from their pay while on active service, considerable hardship is often caused to their dependents if the officers are captured or become missing, or are unable to get any communication through to their homes. Neither the War Office nor the Army Agents have the power to authorise the allocation of an officer's pay and allowance (even children's allowance) to his dependents.

Arrangements are in force by which a special rate of pay is issued to the wife of an officer who is missing after the issue of his pay has ceased, but the latter does not stop immediately an officer is declared to be missing, and it is while pay is issuable that hardship most frequently occurs in cases in which no provision has been made for the wife to draw upon her husband's account. Officers are, therefore, urged to make arrangements with their agents or bankers before proceeding abroad for the provision of the necessary funds for the maintenance of their families or dependents.

FRENCH AVIATION IN THE BATTLE.

The following account of the work of French aviators in the recent battle has been communicated through the Press Bureau by the wireless stations of the French Government :—

On Sept. 29th, during the day, misty weather and low clouds did not prevent the French aircraft from effecting a considerable amount of work. In the course of engagements in which they clearly maintained their ascendency over the enemy, French aviators destroyed or disabled 25 aeroplanes, and set fire to two captive balloons. In spite of poor visibility, French bombing machines successfully carried out several operations, flying over their objectives at low altitudes. Twenty-six tons of explosives were dropped on the enemy's convoys and bodies of troops in the battle area, especially at Challerange, Liry and Mont Saint Martin, and thousands of cartridges were fired on German troops in action. Besides this, the French aviators did extensive registering, and accomplished a great many reconnaissances far ahead of the hostile lines.

ALLIED CO-OPERATION.

The "Times" special correspondent on the Western Front writes on Oct. 1st. :—

The co-operation of the Air Force, both Belgian and British, in the northern battle seems to have been most brilliant as soon as the weather permitted, and has continued throughout the advance. The Belgian flying men have always shown themselves most intrepid and gallant pilots.

The weather seems to have cleared, and the sun has shone nearly all day.

THE A.F.C. IN PALESTINE.

Mr. H. S. Gullett, war correspondent with the Australian Force in Palestine, writing on Sept., 25th, says :—

A few Australian aviators have been engaged among our Arab Allies to the far east of the Jordan. At the last they lived with the Arabs and did much effective bombing and reconnaissance in places beyond the range of the Air Force on this side. One day they crashed two enemy planes among the Arabs, who were frantic with delight and excitement. They also drove down more than three others. This adventure had a profound effect on our Allies, and spurred them to continue and increase their fine efforts. Their escapades include blowing up railways and raiding Turkish posts, and were of a very exceptional kind.

ALLIED AIRCRAFT IN ADRIATIC.

Mr. James Bone, writing in the "Daily Telegraph" of Oct. 3rd, concerning the work of the French Navy, says :—

The Air Forces operating over the Adriatic include important British and American squadrons. In this matter a distinguished British naval commander here pointed out, not without warmth, that very little attention had been given at home to the fact that British flying squadrons in the south of Italy were regularly flying across the Adriatic to attack Durazzo and Cattaro, which meant flying overseas a distance of about 240 miles, there and back, not on seaplanes, but on aeroplanes. If a machine got a splinter in its engine or had its tank cut, and it had to come down on the sea, it was all up with the aviator. Compared with these exploits the overland trip to attack Constantinople was an easy business.

HONOUR TO WHOM?

The Canadian War Records Office make the following announcement on Oct. 3rd :—

Lt.-Col. W. A. Bishop, V.C., D.S.O. (with bar), M.C., D.F.C., has been made Chevalier of the Légion d'Honneur, first class, and been awarded the Croix de Guerre (with Palm Leaf), for distinguished service in the zone of the French Armies.

...THE POSITION OF N.C.O. PILOTS.

Certain of the N.C.O. pilots in the Royal Air Force, some of whom have followed the fortunes of the R.F.C. as Air Mechanics almost since its creation, feel that something should be done to make possible their promotion without appointment to commissioned rank.

The position seems to be that once an N.C.O. becomes a pilot he is made a serjeant, if he does not already hold that rank, and a serjeant he remains indefinitely unless he applies for a commission.

In many instances these men do not want commissions, chiefly for the reason that they have been sufficiently long in the King's Service to take a pride in their position as non-commissioned officers, and they do not care to abandon the amenities of the N.C.O.'s mess, where they enjoy the freedom due to old hands, for an officers' mess, where, as newcomers and strangers, they have to take a subordinate position despite their length of service.

In the Navy, Army, and therefore in the Royal Air Force, the rank most coveted by the non-commissioned man is that of Warrant Officer, and it would seem reasonable that Serjeant Pilots who acquit themselves well on flying duty should be eligible for promotion to the rank of Warrant Officer Pilot with the pay of a Warrant Officer to suit.

The efficient Flight Serjeant on the ground, whose duties do not take him into the air, is always eligible for promotion to Warrant rank, but unfortunately the Serjeant Pilot is not on the establishment of the R.A.F. unit with which he serves, but is merely a supernumerary; and when promotions for officers and N.C.Os. on R.A.F. establishments go through, he is always left in his old position.

Another curious point is that while Flying Officers receive 8s. per day as flying pay, Serjeant Pilots receive only 4s. per day, an arrangement which seems scarcely just in these days of clamour for equal pay for equal work. In the nature of things it is right that Flying Officers should receive more "Regimental" pay than Serjeant Pilots, in view of the differences in their respective estates and their social obligations, but that distinction having been made, there seems no reason why Flight Serjeants who do flying work side by side with flying officers, under exactly the same circumstances, and at exactly the same risks, should not receive similar special pay for air work

The present arrangement for the appointment of private soldiers and civilians as Serjeant Pilots after they have failed to convince the authorities that they are suitable to receive commissions seems also open to revision, because it would seem desirable that the average man who is turned down for a commission should demonstrate his suitability to become an N.C.O. before he is made a Serjeant. His automatic appointment as N.C.O. pilot puts him immediately on an equal footing with N.C.O. pilots who belonged to the first five squadrons of the R.F.C., who therefore wear the 1914 Star, and in several instances the ribbon of the D.C.M., or the Military Medal, or both. As the Serjeant Pilot receives his rank purely for the purposes of pay and not for any other reason, the appointment of pilots to the rank of private, after having been turned down for commissions, as is customary both in the French and German Air Services, would seem a much more satisfactory arrangement. It would then be necessary for them to earn their salt before they were raised first to Corporal and then to Serjeant.

In any case they should receive their wings, and flying pay equal to that of officer-pilots, but the rank which they happened to hold and the differences in their basic rates of pay would indicate very clearly the relative merits and attainments of the different pilots, who were aviators and not officers.—W.L.W.

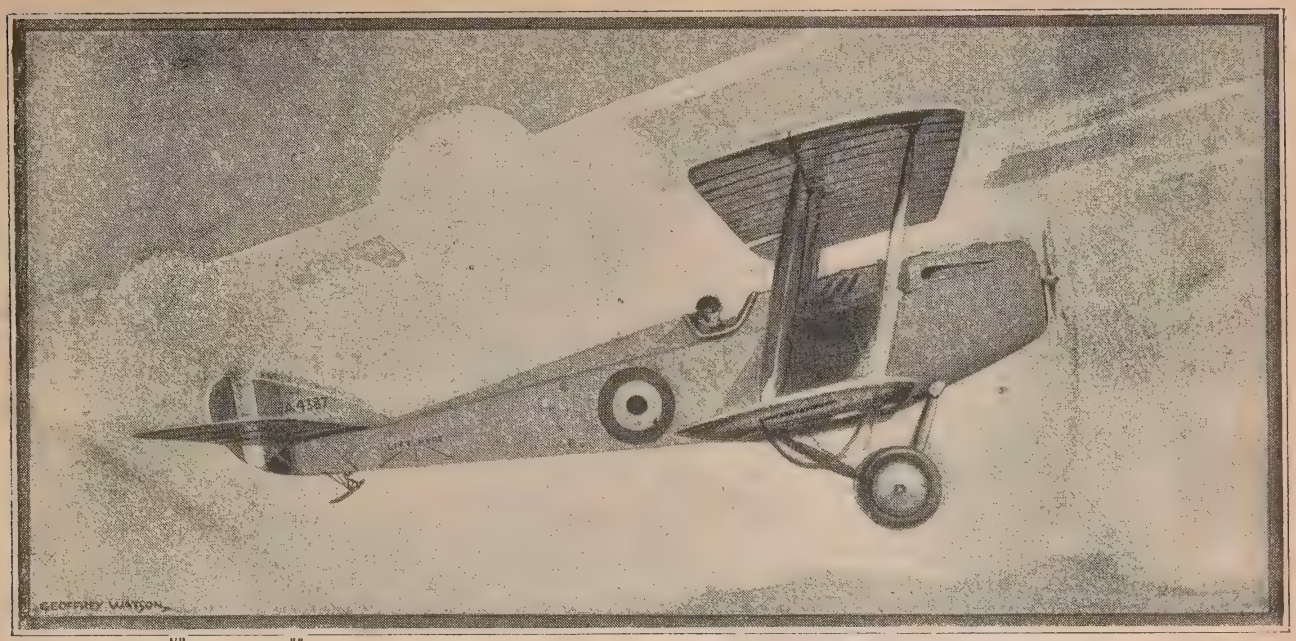
THE RETIREMENT OF ADMIRAL KERR.

The official list of Naval Appointments states that Vice-Admiral Mark E. F. Kerr, C.B., M.V.O., has been placed on the Retired List, at his own request, in order to facilitate the promotion of younger officers (Oct. 1st).

Admiral Mark Kerr was one of the first senior officers of the Navy to appreciate the importance of flying, and no officer of his seniority in either Service has done so much flying. Also he is probably the oldest holder of a pilot's certificate in the world, and certainly the oldest holder of a Royal Aero Club certificate.

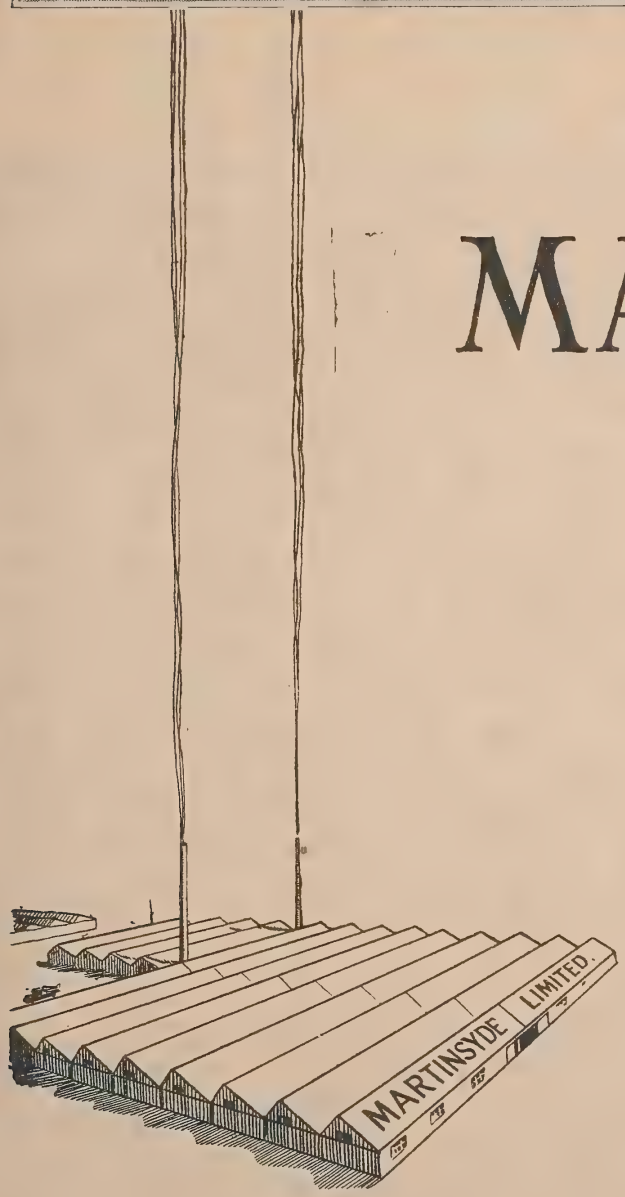
During 1912 Admiral Kerr did a great deal of cross-country flying as passenger with the late Mr. Hamel. Later he went to Greece to organise the Greek Navy, and there learned to fly on a Sopwith seaplane under the tuition of the late Comdr. Collyns Pizey. He returned to England soon after the outbreak of war, but his knowledge of naval aviation and its possibilities was left carefully unemployed for several years.

On the formation of the Air Ministry Admiral Kerr was appointed an extra member of the Air Council, and on the reorganisation of the Royal Air Force by Lord Weir he was appointed to the command of the South-Western Area. No official announcement has been made as to whether his retiring from the Navy entails or is to be followed by his leaving the Air Force.





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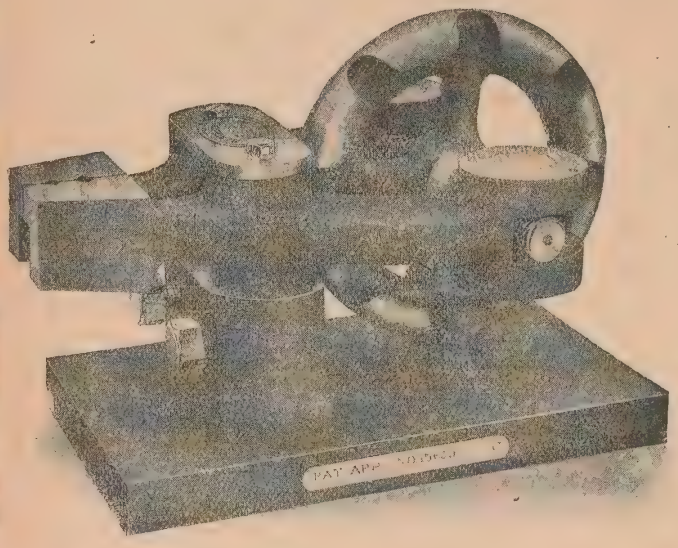


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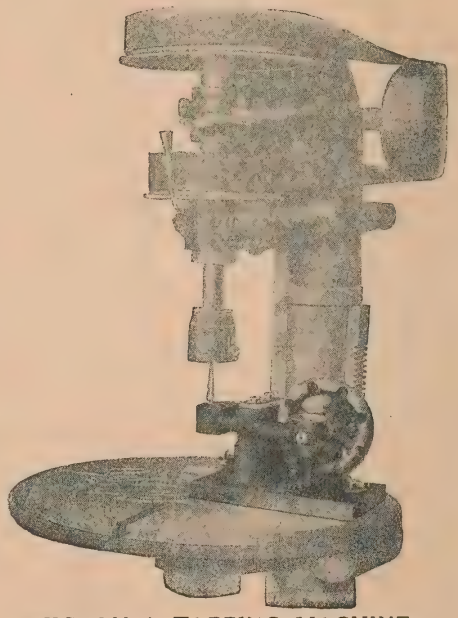


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AN UNADVERTISED WAR.

There is a certain " C " flight of the " Iddy Umpty " Squadron in the Far East who can look back on their record of work with pride to having formed part of what was known as the Arabian Expeditionary Force. I doubt whether such a small force of men ever formed an expeditionary force. It would be interesting to know because I think we can safely claim that honour.

As the world knows the Grand Shereef of Mecca declared his independence of the Ottoman Empire early in 1916. With Arabs who were against the tyrannical rule of the Turk, the Grand Shereef opened war, and very shortly gained two great victories at Taif and Mecca. One has only to look at a map, and study the the Hedjaz-Medina Railway, and one can see that an extension from Medina to any little port on the Arabian coast was Germany's chief idea in building that railway. However, the British Navy, whose work in the Far East has never been chronicled, searched every little nook and harbour, and if by any chance Jacko the Turk was found there, our boys got to work, and soon had Jacko taped.

The First Steps.

Towards the end of 1916 " C " Flight, of the " Iddy Umpty " Squadron (the best squadron that ever left England!), was detailed for work with the Shereef of Mecca's force, and we sailed on a big liner one fine afternoon. In a few days we were at our destination, and there found the Senior Service already at work. Certainly, the Royal Navy were the first to be there, but we were the first body of white troops that ever landed on Arabian soil, at least in the domains of the Grand Shereef of Mecca.

I cannot state the name of the place, but it looked the very last place on the earth to land at. Certainly, Aden was Piccadilly to this exquisite spot. Far away in the distance we could spot a village, and upon investigation we were told it was "hostile"! Then another honour was conferred on us. We were all issued out with a rifle and 100 rounds of " small," and told that we were to keep the rifle as a " best pal." Sure we did. At night ping pings of bullets were heard from all quarters, but none touched anything or anybody of the expedition. Has any other squadron ever had a rifle and 100 rounds served out per man to take wherever they went? Have any other mechanics ever rigged their "bussee" with each a rifle over his shoulder and a sling of ammunition around his neck?

Going Ashore.

Anyway, we soon got to work on unloading our gear. The Royal Navy was busily engaged in building us a pier or jetty, but it was not ready for quite a month. A motor steam lighter was detailed to us, and on this we unloaded all our gear—Fling Corps patent style—Armstrong! But working down in a ship's hold with a temperature of over 130 deg. in the shade was not "all jonnick.". No Labour Corps for " C " Flight—any other flight, but not " C." " C " Flight was never beaten, and never will be.

The boys slaved night and day until we got the ship clear and the apparatus all ashore. Before we erected the aerodrome we used to sleep on the boat at night, and in the morning the R.N. sent a ship's galley to row us ashore. This lasted some time, but on the advent of our parent boat, H.M.T. "E——," it was stopped, and we had to row ourselves ashore.

In this way we became expert scullers—per-haps. The oars weighed about a hundredweight, and the boat was a small edition of a Dreadnought, and to pull that ashore was a brilliant idea of an officer. We had only our " gunfire " issue of tea before we started. Pulling that boat on an empty stomach was fine exercise, but we stuck it out and used our privilege, " grumbling."

Upon landing we met the soldiers of the Shereef. At first glance one was not over-anxious to make their acquaintance. They looked rather a nondescript crowd and not at all pleasing. They generally wore long white flowing robes and the usual headcloth and ropes, and went barefooted and armed to the teeth.

They were officially " introduced " to us as " our Allies." We soon became acquainted, and with our limited edition of Arabic we soon made pals. If the Arab exclaimed " Inglesie askiri quois katier " (English soldier very good), we would answer in the vernacular, " Shereef askiri katier quois katier," meaning " Shereef's soldier good, very good." Of course we meant it.

First Flights.

In a very short time the aerodrome was marked out, hangars erected, workshops fitted up in B.E. cases, petrol store made, wireless apparatus set up, and camp laid out. We were detailed off in two parties—a land party and ship party.

The officers lived on the boat, and likewise clerks and batmen and a few mechanics. A few days later the first machine was erected, and I will always remember the first flight.

There were not many Arabian soldiers at this spot and very few " civvies," so to speak, but what there were came to see the first flight like a first night at a play. The 'bus was pulled out, and the crowd of Arabs were all sitting on their hunkers jabbering Arabic and getting very excited.

On the word " Contact " the engine opened up, and upon the roar the natives got the " wind up " and began to look askance and prepare to scoot. The pilot waved his hand and off went the 'bus along the ground and likewise the natives.

Looking rund, they saw it rise, and that completely put paid to the issue. It was more than they could stand and watch, so on their knees they went in a second, and with " Allah! Allah! Allah! " they watched the machine turn and come back at them. As it passed overhead they went prone on the ground, thinking their last minute had come, and when they looked up again and saw the machine miles away they laughed and began gesticulating very freely, and ran to us and said, " Tiara quois katier " (" Aeroplane very good ").

Next day the first official "recco" was accomplished amid great excitement on the part of the pilot and Arabs. Those in the interior wondered " What the devil next? " and promptly let fly at the monster bird, and the 'bus was well holed when it came back. Telegraphs being unknown in the land, runners were dispatched to the various troops and sections of the Shereeffian army, and all was well on future occasions.

An immense amount of official work was accomplished, of which I cannot state the facts. Unknown cities were discovered, photographs taken, enemy forces found, and information laid, and later on the Expeditionary Force got to bombing

Work and Some Play.

The heat at this place was very intense. We knocked off from 11 a.m. till 3 p.m. All "reccos" were made in the early dawn, and the overhauling and repairing was done in the afternoon.

It was not all hard work. When we got everything into running order we were generally allowed two half-days a week—Saturday and Wednesday. Our O.C. was a great football enthusiast, and so were the boys, so practically every half-day a match was arranged between the R.F.C. and the Royal Navy. We played in all about 16 matches and were beaten only twice—on New Year's Day (our goalie was a Scotsman!) and later on at another port. Anyway, we were champions of the Red Sea League!

Arabian Weather.

Towards Christmas Day, 1916, we began to see weird and wonderful meteoric conditions. Only those who have been in the East can realise what a lightning storm is. As soon as the sun goes down, these wonderful sights occur. A stretch of mountains 50 miles away is lit up vividly. The lightning cracks and sizzles all the time, and when it hits the earth there is a loud report.

Go to the wireless operator and ask him what " atmos " are like. He'll let you put the 'phones on and he'll switch the aerial from earth for a few moments. Then you will experience a noise like the report of a 5.9 in your ears, and if you are not careful you will probably get a split ear-drum.

On Christmas Day the weather—which had been working towards rain—opened up and rain it did. In the East it's nothing like a downpour—all it appears to do is for the heavens to open wide and it comes down *en bloc*, and in less than five seconds you are drenched to the skin.

Well Afloat.

At this particular spot the tide used to come in very fast and would swamp all the low-lying ground leading to the aerodrome. We had a road built three feet high all the way to the 'drome, and in less than 10 minutes the tide came in with a vengeance and, with the rain, it rose that three feet and spread all over the aerodrome

The next job was all hands to machines, and we had to prop them up on petrol boxes, and before we left we had the pleasure of seeing all our machines floating serenely on the petrol boxes, and we were walking—I should say paddling—about in a foot of water.

It suddenly stopped at about 11.30, so we seized the opportunity of moving home. Fixing a trailer onto our Crossley car, we searched for the road, found it, and wallowed through the water until it eventually reached and flooded the magneto.

At that precise moment the rain commenced again, and we were drenched once more, and more so, because we had to push our car and trailer with us until we reached the beach. Here we left the car to the tender mercies of the elements and shouted for a boat. About 12.30 we arrived on the ship, and promptly set to work to clean ourselves up—the word having been sent round, "Mafeesh Koloo work" (finish work for the day).

Merry Christmas!

We then proceeded to feel more jolly. The previous night a mail arrived—the first for nearly six weeks—and I was the only one to get a Christmas pudding. This was coveted by all the boys, so to the boys it went, and we mashed it to smithereens, put it into a dixie of custard, and called it "Hello pudding!" because you were mighty lucky if you clicked a piece of pudding. I did not!

Towards five o'clock we got the piano out of the saloon and moved it to the boat deck. We then, officers and men, arranged a programme for the evening. Officers as well as men entered

into the spirit of Christmas, and although we were thousands of miles away from home, we kept it in real A1 style.

The piano, cracked and crocked as it was, poured forth music whole notes flat and sharp—the flight carpenter was engaged to make new keys and strikers, and having worked industriously for a solid two hours, the wire broke as soon as we pushed the key down. Undaunted, we progressed with our programme. Our comedian was up to date with "In these Hard Times," out about two years previously, and eventually the masterpiece of the evening was "Blighty." That song was sung numerous times and with great gusto.

We had just passed the hour of 11 p.m., and everybody was well wound up, when there came from over the mountains a wail that developed into a roar, which struck the ship in the loudest crescendo, and bang went every mortal thing. Awnings laced tightly were blown away like sheets of newspapers; over went the piano, flags went everywhere, chairs likewise, and, in less than five minutes, the deck was cleared, and everybody drenched to the skin.

Down the companion-ways and gangways went everybody, and whether one landed on one's feet or not did not matter—some slid over others, and amid general cursing and laughter we all stripped, got between our blankets and into our hammocks, and slept a very just sleep. To look at the land next morning was a great scene—all the way to the aerodrome was one sheet of water, so we boated to the hangars that morning.

A New Move.

We remained at this place until the early spring and then, having helped to put paid to Jacko with the Shereefian forces, we packed up all our gear—transported it all to our parent ship again—filled the holds with all sorts of gear at a temperature of 130 degrees in the shade—slung the B.E. cases on to the davits of the ship (having previously taken off the boats, and piled them well on the saloon deck) and merrily set sail to another spot along the coast a good 300 miles nearer England.

To see our poor old rat-trap of a boat ploughing through the Red Sea with B.E. cases slung where the boats ought to have been was a sight. Luckily we had very smooth weather, otherwise—well, some B.E. cases would have been well adrift in the Red Sea.

I happened to be one of the advance party to this new spot and had a very pleasant voyage on a warship. We carried a lot of gear, as we were supposed to get a camp up, find an aerodrome, get some hangars up, and get our stores landed.

The R.N.'s. Work.

As we entered this port of El—— we mechanics began to see things. This spot had been held by the Turks and taken by the Navy and held since, and one could see traces—just slight traces! —of the Silent Navy's work. There was a tower standing out on a jutland, hundreds of feet high which was full of snipers when the Navy got there. One 4.7 from H.M.S. —— had drilled daylight right through it and other marks were well visible.

Turning to face the town, there was real evidence of what the Royal Navy can do. A fort on the top of the cliffs was completely reduced to ruins, and the stones used to face that fort were "some stones," but it is wonderful what a piece of H.E. will do.

Houses were smashed to pieces, but what struck me as most significant was a mosque, right in the middle of the town, not scratched. This mosque the Turks used as an Observation Post and the Commander of H.M.S. —— saw it. Not worrying much, he ordered a boat out, and with four trusty seamen and himself, landed under a galling fire, rushed the mosque and retired with his party intact and Jacko well running.

Next day a general landing took place and the port was cleared of Turks, the remainder of the Turkish forces split up and were hammered to death by gun fire and eventually surrendered.

This port was reckoned to be one of Arabia's best, and it certainly was the port for a very large city inland. It is built on a hill, and when we (advanced party) landed we commenced wondering how and why and wherefore could we get our stores to the aerodrome-to-be. Why the Navy did not blow away more of the town we always enquired. To get to the 'drome, we had to negotiate a hill with an incline of about one in four with a hair-pin bend in it. We surveyed our position and decided that a certain wall had to come down. Out came axes and shovels, and after breaking three axes against the wall we gave it up and asked the Navy to send over a 4.7 to clear it away. This, however, they politely refused.

The jetty was a wash-out to land any gear upon, and we soon calculated that some real hard graft was in front of us. Anyhow, relief came in the way of some Egyptian army, who worked with a will and energy typical of them.

Two boats were lashed together and made into a sort of pontoon, and on to this wing cases and engines were lowered and towed ashore by a steam pinnace. When the pontoon got alongside the jetty, it was promptly lashed tight, and with the aid of rollers, and plenty man-power, the cases were got off the boat, rolled up the trailer, and hitched to the Crossley car.

Then the fun commenced. The car started chunking, the "Gyppies" started shouting and pushing, and with a general "Ir-er-lis" (Lord knows how to spell that mystic word, but it will move a mountain!) we negotiated the first bend OK, went along a short straight, and commenced to climb the hill. Here we pushed, swore, cursed, and by sheer physical force lifted the case and trailer around the corner and pushed hard and furious until we got to the top of the hill. We had a short rest and then commenced a run for the aerodrome.

The streets (it's a pity to use that word!) were just wide enough for the trailer to pass along and, roughly speaking, we had covered a furlong when all of a sudden the road gave way near a house and our case and trailer fell into an old Arab cellar. The cellar protruded under the roadway, and not being used to a few tons' weight gave way, and had it not been for the streets being so narrow we should have had an awful crash; as it was, the case tilted and rested against the side of the house.

This reverse made the "Gyppies" laugh and we white men swore hard. We had a sort of conference and decided that the only way to get the trailer and case out was to lift it bodily from the hole. Within a short period we had about a hundred hands all around the case, and with a tremendous lift and "Ir-er-lis," plus the car's power, we just managed to get it clear of the hole, and, keeping going, we cleared that alley-way in real style and stopped.

Before we moved that case another inch we formed up and marched up the remainder of the way, stamping our feet on the ground to find out if there were any more holes underneath. However, we were lucky and found "nowt," as a Lancashire man said. We got all our gear to the aerodrome ground, and, working with a great will, we managed to get through the work allotted to us before the arrival of the remainder of the boys.

A "Shocking" Trick.

This port had a population of 500 or 5,000 (I forget which), and had never before seen a motor-car or a trailer. The little native children were ever so keen on riding in the car and on the trailer. This became a general nuisance. We could not go an inch without being stormed with children and others of more mature age. They all wanted to ride. This had to be stopped and a "Sparker" (wireless operator) was given the job of live-wiring the car and trailer through a coil of an ordinary field telephone. The voltage was very low and the shock could not hurt those people. So, with car already, we set out to have some sport.

Going gently through the town, the crowd started to rush us and, not expecting anything bar our shouts, car and trailer soon filled up, and then the key was pressed—and, oh! what havoc among the joy-riders. They fell off, jumped off, wriggled off, howling like a pack of hounds let loose; invoked all the Allahs and prophets; rolled on the ground, holding that particular spot where they got the shock, and finding that the pain soon went away, very, very carefully looked for the blood!

Up to a certain time our boys kept a stern face, but upon the shouts and jumps we buckled up with laughter; and the natives, seeing us laugh, looked at their hands and not finding any blood, laughed also. But for a great time after they had a very holy respect for our Crossley car.

Aerial Arrivals.

The next exciting incident occurred a day or two before our parent ship arrived. Two of our machines flying from our old aerodrome, appeared over this town shortly before mid-day. A couple of large fires were lit to show the pilots the wind direction and very shortly after the machines landed. The landing caused a great commotion among the natives. All the populace were on the 'drome.

They all wanted to touch the machines, and in less than five minutes you could not see the aeroplane, only crowds of heads bobbing up all over the machine. Some, more intelligent than others, pointed out and touched the "joy-stick"; others, more daring, touched the engine cylinders and got doubly repaid for their trouble. These were the first aeroplanes the natives had seen, and whilst they inspected one we housed the other, and then, by gentle persuasion managed to get the "Tiara Quois Katier" into its hangar but we could not let the curtains down as the whole place was thronged by Arabs of all kinds.

One mechanic mounted a pair of steps and started the old showman's lingo: "Walk up! Walk up! ye black heathens and robbers, and see a real live aeroplane." This tickled the officers and white men very much, and in about an hour later we were allowed to let down the front canvas.

Going Ashore.

The day the remainder of the boys arrived was also a very exciting one—in fact, for days after great excitement prevailed. When our parent ship arrived and took up its berth we (the advanced party) were still on H.M.S. ——. At 8.30 p.m. a signal came from our C.O. for us to return that night. This particular night a very heavy swell was on, and we loaded the platform boat with our own kit-bags and a few cases of stores, also our mess table and forms. This was done on the lee-side of the boat, and "Cast off" being shouted, off we went, towed by the pinnace.

As soon as we came under the stern and got the full force of

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the swell and wind, we knew it. The pinnace was chunking along very merrily, and we were singing, "I Want to Go Home," when, all of a sudden, we heard the coxswain of the pinnace shout, "Silence," and then this followed. "—— Ahoy! Steam's given out in pinnace. Send help immediately—we are drifting onto the reef."

At first we thought the coxswain was "magnoon" (mad), but were forcibly convinced when we heard the seas dashing on the reef about 20 yards away. The coxswain then yelled again, and called to us chaps to paddle with anything; and, on investigation, all we found we could paddle with was our mess table and forms.

I grabbed one of these and paddled one hand and tried to loosen my boots with the other. For a time we were "severely windy" and all thought we were "for it," when the ship we had just left opened up her searchlight.

This helped to allay the "wind," but we could see we were perilously near the reef. We paddled, and paddled and paddled, and were eventually taken in tow by a boat from our own parent ship, manned by R.F.C. men and officers. In a few more seconds another R.F.C. boat arrived, beating the Navy hollow, as we were half-way home when the Navy lifeboat came tearing up.

From that day we called ourselves "Harry Tate's Navy"—as, we told the naval authorities, we had wrested that title from them.

A Sea Chase.

Next day while unloading our B.E. cases on to the platform boat, one accidentally got adrift because a man missed the hawser which we were pulling our cases ashore by, and off it went, carried by the tide out into the harbour, going swiftly for the Red Sea. We suddenly found out our predicament. In a very short time a "Sparker" got busy on the top of the case—we all called and shouted out for help, and then the signaller gave it in semaphore.

Being in broad daylight we were not at all nervous and began to enjoy ourselves and to lay the odds on who would reach us first. The Navy won this time; they were only a matter of a couple of hundred yards away.

Tidying Up.

The next week was busily spent in fixing up the hangars and making our aerodrome "nice" (oh, yes, I've whitewashed white stones and placed them all round an aerodrome!) and building up the machines and once again the official "reccos" commenced, with very good results.

Perhaps one day the official work will be published—it would make extremely good reading. A month later we had a new C.O. sent down. Previous to his arrival, we had very good pilots, but no "stunt" flyers among them. Our new C.O. was a captain who had seen some *real active*, and I'm sure his first flight in Arabia will always be remembered by the boys. I'm equally sure he set out to make an "impression" on everybody, because he did so. One point was certain—he could not fly straight. The poor old B.E. fairly "talked" under his control. Flying right or left wing low he went up like a rocket—stalled his 'bus how he liked—switchbacked, spiralled, nose-dived, and eventually had a game of leap-frog over the tents. Later when he became more accustomed to his machine, he used to "spin" his wheels across the aerodrome three or four times, go up to about 5,000 feet, loop down right into the sea, almost dip his wheels, and up again.

In the Hinterland.

From this point we had a far greater sphere of operations, and later on it was decided that an advanced landing ground should be made. This led up to the "Car Stunts." I doubt if ever R.F.C. Crossley cars covered so much ground as ours did. Our cars would go on "treks" for a week or so, exploring ground hitherto unexplored. Tracks had to be cut and made as very dense forests of undergrowths were discovered. Fitted with double wheels, the Crossley will go anywhere.

"Car stunts" were looked on by the boys as "The Thing," and a trip to the advanced landing ground was always overwhelmed with volunteers. However, one occasion arose (the only one we had), a 'bus came a cropper at a spot inland, and it was a pretty bad smash. The pilot escaped unhurt, and luckily it fell in our own lines, because we had been told (or, at least, a story was circulated) that the Turks had said that the first machine to land in their lines, or to be captured, the pilot would be crucified to his own propeller. Needless to say, Jacko never had the pleasure, and had one of our machines had the misfortune to land in enemy lines the pilot knew what to do.

A salvage party was detailed, and the Crossley car looked really business-like. Cases of petrol, tanks of water, "bivvies," food, and tool-kits were loaded on her, and off she went, with cheers from the lads. The job took a week to do, and our C.O. kept the salvage party in high spirits by flying over every day with fresh bread, water, and rations.

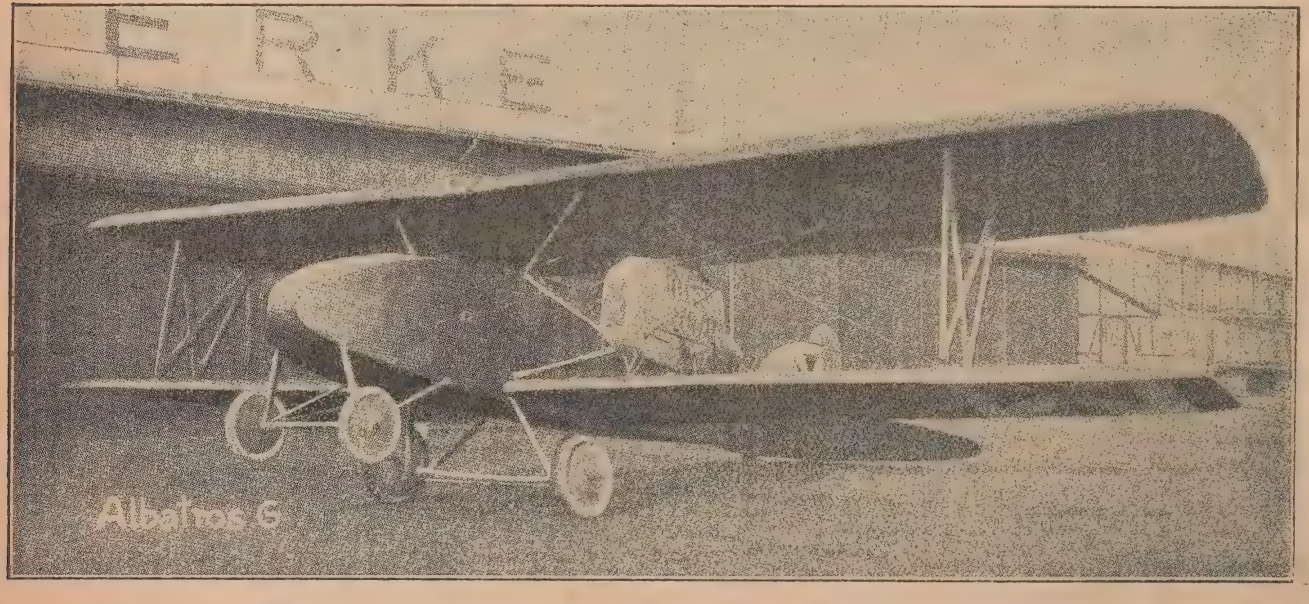
Towards the summer of 1917, it was decided by the Authorities to get a move on against the Turks, so a lot of bombing was done by us, with very excellent results; and the Shereefian forces, operating further north, delivered a knock-out blow to the Turks at Akaba and Maan.

Very shortly after this, we got orders to pack up, and we were not at all sorry. We had been in desolation, plus isolation, for nearly a year, and Egypt would be very acceptable. Our parent ship was not big enough to carry all our cases and gear, so we had to ship it on to her and then tranship it on to a larger ship. Ye Gods! it was hard graft while it lasted. A few days later we landed at Suez, and eventually rejoined our squadron.

Such work out there has been hitherto unknown to the British people, though well enough known to the Turks. There are no squadrons that work harder than those in the East. Although they have not the rain and mud they have the perpetual sand and sunshine. Squadrons on the Western front would prefer sand and sunshine, and squadrons out in the East would prefer rain and mud. You can always have too much of a good thing. The boys in the East have had over two years of it—some even three years—and no leave to Blighty. You can have seven days in Cairo provided you pay your own railway fare.

However, sand-tea, sand-stew, sand and rice, bacon fried in sand instead of breadcrumbs, porridge with sand instead of sugar, gets a bit boring, and even Cairo is a change. If a chap complains to another he'll probably get the Flying Corps reminder: "You're unlucky. Besides, you said you could do it." If you want sympathy, you will get it in the shape of sarcasm. 'Twas ever thus in the Army. That is why they are always merry and bright.

B. O. B.



Another view of the Albatros Twin-engined Bomber, a medium-sized machine reminiscent of the A.E.G. Type.

THE N.E.A. (R.A.F.) ATHLETIC ASSOCIATION SPORTS.

The first annual sports of the North-Eastern Area Athletic Association of the Royal Air Force were held on the Doncaster Racecourse on Saturday, Sept. 28th, by permission of Major-General the Hon. Sir Frederick Gordon, K.C.B., D.S.O. The prizes were valued at £300, and the events numbered 30, with 450 entries. The bands of the N.A.R.D., Sheffield and the Stores Depot, Milton, were in attendance.

Major-General Gordon, who was introduced by Col. E. F. Briggs, D.S.O., distributed the prizes. He expressed his thanks to everyone who had taken an interest in the meeting. It had, he said, meant an immense amount of organisation beforehand, and a lot of arrangement regarding the work done there and at the various stations of the Royal Air Force. It was the first meeting of its kind held in the North-Eastern Area, and he hoped future meetings would be as successful. Great credit was due to Colonel Briggs, Capt. Metcalfe, and everybody who had assisted.

Judges: The Rev. M. H. Edwards, Major P. A. O. Leask, Major E. J. Routh, Major Wilson, Capt. G. P. Abbot, Capt. Mordrern, Capt. Bradley, Capt. B. Williams, Lts. D. B. Wilson, M.C., and E. E. Johnson; referees: Col. E. F. Briggs, D.S.O., Major C. A. Shaw, and Capt. B. T. Metcalfe.

The silver challenge cup, value £60, for the station securing the greatest number of points at any annual meeting, resulted in a tie between three stations—E.R.S., Sheffield; Mechanical Transport, Leeds; and Salvage, Sheffield. It was decided that each of the winning stations shall hold the trophy for four months.

Unfortunately it is impossible owing to pressure on space to publish the results. And it only remains to state that the day was an immense success, the attendance being some 10,000 people.

The Association has been founded for the purpose of co-ordinating athletics throughout the R.A.F. in the north of England, encouraging sport of all kinds, and acting as a parent body capable of affording assistance, financial and otherwise, to small and isolated stations which find difficulty in obtaining recreative facilities.

AN AIRCRAFT THEATRE.

On Saturday, Oct. 5th, several hundred persons assembled within the large Canteen Theatre at the works of Messrs. Gordon Watney and Co., Ltd., were highly delighted with the rendering of "Sweet Lavender," by Major Gordon Watney's Dramatic Society.

The Comrades of the Great War (Weybridge Branch) benefited by the proceeds of "Lavender Day" throughout West Surrey, and also by the proceeds of the play which is associated with Lavender Day. Major Gordon Watney is Commandant of this Branch, and the discharged soldiers are indebted to him for the spacious club premises possessed by them.

"Sweet Lavender" is one of Sir Arthur Pinero's plays, and certainly full justice was done to the writer by the way in which it was portrayed at the Canteen Theatre.

The leading rôle was played by Major Watney, who earned the approval of the audience by his fine rendering of the part of Dick Phenyl. The other parts were extremely well portrayed by Miss Suzanne Sheldon, Mr. C. Hucks (who took two parts), Mr. J. W. Dews, Mr. F. Lidington, the Hon. Mrs. Rowland Winn, Mrs. H. Dormer, Mrs. Gordon Watney, Mr. Cyril Chamberlaine, and the Hon. H. Cavendish Butler. The names of the performers appear in this order on the programme and all of them did much for the success of the play.

Pleasing selections of music were rendered by the Social Club orchestra, conducted by Mr. Renard, who personally composed the incidental music.

It is hoped that the play, acted by the same caste, will shortly be presented in London in aid of the R.A.F. Prisoners of War Comforts Fund.—R. M.

THE DISAPPEARANCE OF LT. GARROS.

It was reported from Paris on Oct. 7th that Lt. Roland Garros of the Service d'Aviation Militaire is missing. It is stated that he went on a reconnaissance a few days ago and did not return. M. Garros has flown since aviation was in its infancy. He flew from Paris to Madrid, and from Paris to Rome, and made a trip of 500 miles across the Mediterranean. The month before war broke out he took part in the race from Hendon to Paris and back, and might have won it but for engine trouble, which made his time some twenty minutes longer than that of the winner, Mr. Walter Brock. After hostilities began he was the greatest bugbear to the Germans on the Western front, and had many remarkable exploits to his credit. In April, 1915, when flying near Ypres, he determined to bomb a train from a low altitude. While he was doing so his motor was hit by a bullet, and he was forced to land. For a time he was able to hide, but later as he was trying to get away, he was captured. Early in February, 1918, he managed to escape from Magdeburg camp and to make his way to the Dutch frontier.

A TRAINING SCHOOL FOR SOUTH AFRICA.

Cape Town (undated).—Col. Menta, Minister of Lands, has announced that arrangements have been practically completed with the Imperial authorities for the establishment of an air training school in South Africa.—Reuter.

ITALIAN NOTES.

On Sept. 21st, in the presence of the Prince of Wales and other royal or illustrious men, H.M. King Victor Emanuel decorated Majs. Whittaker and Barker, Capts. Stubbs and Cottle, and other British officers, and many of the great flying men of Italy and the Allied Powers.

Two Gothas, a Brandenberg, and various fragmentary evidences of aerial supremacy lent reality to the brilliant scene.

A "march past," terrestrial and aerial, afterwards took place, in which the various sections attached to the Aero Corps were much in evidence. The Aero-Coastguards, with their listening vibration-catchers, seem to have impressed the journalists.

One hears of hundreds of Siamese cadets who are training for pilots under Italian instructors and who are to use the new American-built aeroplanes when their time comes.

Little as one hears of Austrian dirigibles, the authorities appear to have thought it a good thing to burn one of their nesting isles, Lagosta, recently.

I notice continual evolution of detail work on the C.A.s. Mud-guarding and the giant skids under the wings are the last things in the way of visible improvements which are to be registered.—T. S. H.

THE DEATH OF LT. RUMEY.

The following account is from the "Times." Presumably the writer of the account has already forgotten Rittmeister Baron von Richthofen and his 80 aerial victories.

The Berlin "Lokalanzeiger" of Oct. 8th announced the death of Lt. Fritz Rumey.

The number of successes credited to Lt. Rumey, 45, is exceeded by only two other German aviators—Lt. Udet, who, on Aug. 24th, was said to have brought down 59 enemy machines, and Lt. Loewenhardt, who, on Aug. 10th, was reported to have scored his 52nd and 53rd victories. Lt. Rumey began his official career as a corporal on May 21st, when a double victory was claimed for him, and his successes were given as 20 and 21. Three weeks later he was made serjeant-major, and, before June was out, he was promoted lieutenant.

AIR RAID DAMAGE IN FRANKFORT.

The following account has been communicated to the Press:—

A neutral resident, who has just returned to his own country from Germany, gives some striking first-hand information concerning the effects of the recent British air raids over the Rhine provinces generally, and particularly over Frankfort.

The central part of Frankfort main station has, it seems, been so extensively damaged by British bombs that trains are no longer able to enter, and are being operated from provisional and hastily constructed wooden arrival and departure platforms some distance from the station. According to this witness the population of Frankfort is in an extraordinary state of nervous excitement. At the least unusual noise inhabitants retire to their cellars, and do not dare to sleep in their apartments.

As illustrating the moral effect of the British raids upon the civilian population, the traveller states that throughout this part of the country he heard nothing but most depressing talk about present conditions in Germany, and the prospect of further attacks from the air.

AN AEROPLANE AS A DECOY.

From the "Daily Chronicle" of Oct. 5th:—

Two British aviators, at great personal risk, enabled a successful local raid to be made with hardly a single casualty to the attacking British.

It had become necessary to take a small salient in the line. The Germans were expecting an ordinary attack, with its preliminary bombardment. Early in the morning a British aeroplane passed very low over the front trenches, and purposely flew slowly parallel to the German line, but about five or six hundred yards behind it.

The Germans thought this a target not to be missed, and unsuspectingly fell into the trap set for them, by turning their backs to the British trenches, in order to fire on the machines. Whilst they were thus busily engaging the aeroplane, the British infantry leaped from their trenches, and captured in a few minutes a position to which considerable importance was attached by the British Staff, incidentally taking quite a number of prisoners.

The aeroplane returned to its aerodrome, riddled with bullet holes, but, fortunately, both the pilot and observer were unscathed.

THE U.S. ALTITUDE RECORD.

Reuter's New York correspondent writes on Oct. 7th:—

The contest committee of the Aero Club of America has awarded the altitude record of 28,900 ft. above sea level to Capt. Ruddy W. Schroeder. The flight was made on Sept. 18th at the Wilbur Wright Field, Fairfield, Ohio, in a Bristol fighting aeroplane, with a 300 h.p. Hispano Suiza engine. The record made by Capt. Schroeder has been recognised by the United States Government.

MISTAKEN IDENTITY.

Reuter's correspondent in Geneva writes on Oct. 7th:—

The newspapers announce that at 20 minutes to 1 this morning a German aeroplane attacked and machine-gunned a Swiss captive balloon stationed between Miecourt and Cornol. The balloon caught fire and fell some metres from the frontier. Lt. Fuiry, who was in the balloon, was burned to death.

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NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

Air Ministry, Sept. 10th.

His Majesty the King has been graciously pleased to confer the undermentioned awards on Non-commissioned Officers and Men of the Royal Air Force, in recognition of gallantry in flying operations against the enemy :—

Awarded the Distinguished Flying Medal.

222763 Serjt. Percy John Adkins, D.S.M. (Woolacombe).
A highly competent and gallant observer. He was largely instrumental in the success of two long-distance bombing raids. This non-commissioned officer uses his experience to the greatest advantage and has set a fine example of devotion to duty.

No. 202615 Cpl. (Aerial Gunlayer) Leonard Albert Allen (Henly-in-Arden).
One of the keenest and most reliable gunlayers in his squadron. He has frequently been in action with enemy aeroplanes, and has flown for 100 hours on photographic and reconnaissance flights.

204157 Cpl. (E) William Norman Blacklock, D.S.M. (Hendon).
Whilst in action the oil tank of one of his engines was struck. Exposed to very heavy fire this mechanic, regardless of danger, went out on the plane, and, with his hand, stopped a heavy leakage of oil, and so enabled the machine to fly a considerable distance and land within reach of help.

K/3007 1st Pte. Aerial-Gunner Sydney Frank Briggs (Brighton).
For distinguished service in an attack on an enemy seaport, when he sank a hostile destroyer by a direct hit from a bomb.

No. 206181 Serjt. Mech. Thomas Caird, D.S.M. (Edinburgh).
Has assisted to destroy hostile aircraft on several occasions, and has been frequently in action. Serjt. Caird has been twice shot down in flights a long distance away from his base, and always performs his duties with gallantry and zeal.

No. 224573 Serjt. Mech. William George Chapman, D.S.M. (Streatham, S.W.).
Has been a member of a seaplane crew on practically every long-distance patrol. He has taken part with zeal and gallantry and coolness in numerous engagements with hostile aircraft.

No. 223740 1st Class Pte. (Gunlayer) James Chapman (Percy Main, Newcastle-on-Tyne.).
During a recent raid four of our machines were attacked by twelve enemy aeroplanes. The pilot of this observer's machine was badly wounded, and lost consciousness. The machine fell out of control, but Pte. Chapman took control from his seat and flew the machine back to our aerodrome, and landed without breaking a wire, exhibiting skill and presence of mind worthy of the highest praise.

65289 1st Class Pte. (Actg. Serjt.) Ernest Clare (Chorley).
Has been engaged on seventeen long-distance bombing raids. He has displayed skill and coolness in handling his gun on the numerous occasions on which his formation has been attacked by hostile aircraft. Serjt. Clare has rendered valuable services as an observer on photographic reconnaissances as well as on long-distance raids.

F/9689 Actg. Air Mech. (W.T.) Albert Edward Clark (Woodford).
Has been employed flying as an observer for nine months, during which period he has rendered valuable services; on two occasions he dropped bombs over enemy submarines.

No. 202067 Serjt. Mech. Sydney Hinton Crook (Horley, Surrey).
Has carried out a great deal of useful work as engineer on seaplane long-distance patrols. Has been in many engagements with hostile seaplanes, and has always behaved with courage and coolness.

No. 228395 Air Mech. 3rd Cl. (W.T.) Cyril Rupert Deeley (Birmingham).
Has carried out consistently good work on special reconnaissance patrols over hostile waters. On a recent occasion he established wireless telegraphic communication with his base from a distance of 140 miles, after half his aerial had been shot away by hostile aircraft.

No. 121180 Serjt. William Dyke, D.C.M. (Nuneaton).
On all occasions this N.C.O. observer has carried out his work conscientiously and well, notably when engaged on photographic service, obtaining excellent results often under very difficult conditions. Since joining his present squadron he has taken part in twenty-nine bombing raids, ten photographic flights, and fourteen reconnaissances, many at low altitudes. On four occasions he has encountered large formations of enemy aeroplanes, and has himself shot down out of control three machines.

No. 210359 Air Mech. 2nd Cl. (W.T.) George Alfred Gibbs (Plaistowe).
Has been engaged on long patrols for twelve months; carries out his duties under fire with gallantry, and can be thoroughly relied upon in any emergency.

113763 Serjt. John Charles Hagan (Ulverston).
A gallant and skilful aerial gunner who shows the greatest keenness in his work on patrol. On one occasion he shot down an enemy machine after he himself had been wounded.

210675 Pte. 2nd Cl. (Gunlayer) Arthur Tom Harman (Edmonton, N.).
For gallantry in the air in assisting in the destruction of an enemy airship which recently attempted a raid on the North-East Coast of England. One airship was completely destroyed and another was damaged.

222927 1st Pte. (Aerial-Gunner) Albert Edward Humphrey (Plumstead, S.E.).
When escorting an important reconnaissance his machine was attacked by eight enemy aeroplanes. After firing several rounds his gun jammed, when he immediately picked up his spare gun, and, firing from his shoulder, brought down one of the enemy machines and continued firing on the others until he was severely wounded. Aerial-Gunner Humphrey has been 23 times engaged over enemy territory, and has proved himself gallant and resourceful on all occasions.

204766 A/A.Mt. (G) Gunlayer William Jones (Ealing).
He has taken part in 105 successful bombing raids and has shown conspicuous courage and determination often in the face of strong opposition and intense anti-aircraft fire. He has destroyed or brought down out of control six hostile machines.

225232 Air Mech. 1st Gr. (E) Douglas William Kirby (Swindon).
Whilst in action, his oil tank being pierced by a bullet, this airman climbed on to the wing and endeavoured to stop the flow of oil. Although exposed to heavy fire, he most gallantly remained at his post till the engine finally failed.

7054 Serjt.-Obsr. Frederick Lee (Ockley).
During a recent long-distance bombing raid the formation to which Serjt. Lee belonged was attacked when over the objective by 20 enemy scouts. He engaged one of them with his double gun, which caused the enemy machine to turn over on its back, and after various gyrations the pilot fell out of the aeroplane. This N.C.O. has proved himself a gallant and skilful observer, and in all respects a most reliable man in the air.

No. 208711 Air Mech. 1st Cl. Alexander Robertson Moyes (Lewes).
Has always displayed gallantry and devotion to duty. Has flown for more than 300 hours in seaplanes, and has been in action with hostile aircraft on numerous occasions.

203962 Air Mech. 2nd Cl. (Gunlayer) David Lewis Moxey (Kennington, S.E.).
An excellent gunlayer observer. During a late raid he shot down and destroyed an Austrian seaplane, displaying marked skill and resource.

No. F.16604 A.C.1 (Gunlayer) William James Middleton (Woodford Green).
He has taken part in 67 raids and has shown conspicuous gallantry and skill in bombing enemy lines of communication, dumps and aerodromes. On one occasion he obtained six direct hits, despite intense anti-aircraft fire.

No. 67162 Pte. 1st Cl., Arthur Newland (Enfield Wash).
He is an excellent shot, and has done remarkably well as an observer, gaining the confidence of the pilots with whom he has served. He has personally assisted in shooting down five enemy aeroplanes.

211300 Serjt. Cecil Arthur Otway (Harringay, N.).
A very skilful observer on long-distance bombing raids. On a recent occasion, owing to exceptionally bad visibility, the objective town could not be found by the pilot. Serjt. Otway persisted, and eventually found the locality, and the great enemy war factory was most successfully bombed. This non-commissioned officer displays exceptional ability and great determination in the carrying out of any task assigned to him.

No. 21530 Air Mech. 1st Cl. Cecil Herbert Palmer (Weston-super-Mare).
This airman displays conspicuous gallantry and devotion to duty. On six occasions he has been shelled while on observation duty in a balloon, but he has invariably completed his task. In one attack his balloon was punctured in nine places.

No. 205476 Cpl. Mech. Thomas Mayne Reid (Banbridge, co. Down).
Has flown for 300 hours in seaplanes, and has been engaged in many long reconnaissances. Recently he was forced to alight after a fight with hostile aircraft, and affected an engine repair on the spot, which enabled the seaplane to return home.

206515 Serjt. Mech. (E) Henry Robert Stubbington (Southsea).
Deserves the highest praise for his coolness and skill in repairing the oil pipe of his seaplane in a very heavy sea. The damage occurred in an attack on a Zeppelin, and his good service in repairing the pipe prevented the machine falling into the hands of hostile destroyers which were in pursuit.

221380 Cpl. (Gunlayer) George Ernest Thrift (Bordon, Hants).
A most reliable gunlayer observer who has taken part in numerous bombing raids, invariably rendering valuable service.

225673 Pte. 1st Cl. Gunlayer, Douglas Wentworth (Erith).
Whilst taking part in a bombing raid on hostile docks his machine was attacked by several enemy aeroplanes and badly shot about, the petrol supply pipe being perforated. Realising the danger of the machine catching fire, Pte. Wentworth, with great courage and presence of mind, climbed over the pilot and stopped the leakage with his hand.

Awarded the Air Force Cross.

Capt. John Auguste Boret, M.C. (R. W. Surrey Regt.).
Capt. Sidney Robert Stammers.

Awarded the Air Force Medal.

21929 Signalman Colin Hazlewood (Obsr.).

* * *

The undermentioned Officers and other Ranks have been brought to notice in despatches and reports, for valuable services rendered :—
Lieut. Edward John Addis (Sea Patrol).

(*Continued on page 1326A.*)

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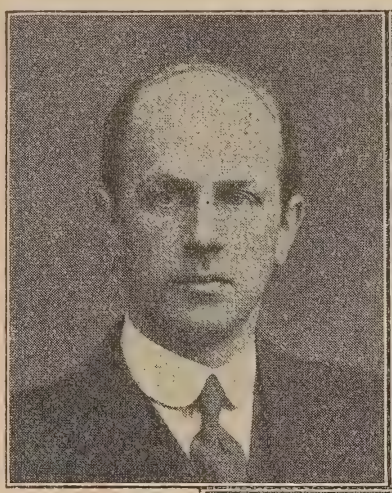
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BY R. P. HEARNE.

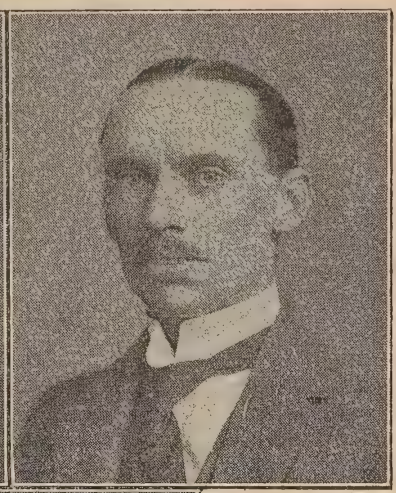
XIV.—ARNOTT AND HARRISON, LTD.

There is nothing I like so much about a business or a factory as the personal touch. Perhaps it is a sign of old-fashionedness to favour the little shop where one finds the courteous proprietor in charge, instead of having to face the frigidity of perky underlings whose idea of business is like the official idea of war railway traffic—to make it as uncomfortable as possible for the public.

Most of us know the big or the snobbish factory where the caller is allowed to kick his heels by the hour in a dingy waiting room, sign dockets in feeble imitation of the Government department style, relate one's history to office boys and relays of secretaries, and finally be forgotten by the great man for another half hour or so, presumably because he has been on the 'phone with Mr. Lloyd George or General Foch, helping them out of a critical difficulty.



Mr. F. A. Arnott.



Mr. C. Harrison.

Of course this is exaggerated, because, as a rule, the journalist is pretty decently treated; but there is enough truth in it to justify my predilection for the business or factory where it is easy for anyone to get in ready touch with the principal.

A Sound Policy.

There is sound business policy in this, too, and I note that in many big American undertakings the head welcomes you readily with a "Come along in," what time the Enquiry Office in a fifth rate British establishment has not got over the irritation of hearing the bell ring.

When I visited the factory of Arnott and Harrison I got in touch with one of the directors, Mr. Cyril Harrison, as quickly as if I had been the Air Minister with a £100,000 order and a sackful of O.B.E.'s for distribution in the factory. The other partner, Mr. F. A. Arnott, was quite as accessible, though he might have pretended that he was surrounded by such a fence of stenographers, private secretaries, managers, messengers, and telephones that a quiet talk was impossible until the war was won.



Mr. F. H. Wright.

From all this you may be led to think that Mr. Harrison and Mr. Arnott are, perhaps, merely ornamental directors, and that the hard work of management is done by others. I can remove that false impression right away by revealing another unique feature of this establishment. The Messrs. Arnott and Harrison are not only the directors of the factory, but they are their own works managers as well!

The Creators of the Business.

These two men have created the industry; they have built it up from nothing within the last two years; and they have now soundly established a factory which I believe will be going just as strong when the war is over. As I have said, they are their own works managers, but that does not fully explain how closely they keep in touch with the work in every branch.

And not only is the contact with the work; it is close and friendly with the workers, too. I had several instances of that. When I visited the factory Mr. Arnott had just returned from his holidays—a walking tour, by the way. In bringing me round the factory he had a nod and a smile for every man at whose bench we stopped, and from many of the old hands came the inquiry, "I hope you had a nice holiday, sir." There was no sycophancy about it, no servility, but it showed a kindly spirit between master and man which is far too rare in these days. And the blame for its rareness is not wholly due to the workers.

The reader may conclude that possibly the factory is very small, employs few workers, and in effect is only a one-horse affair. Nothing of the kind. It is what one can term a medium-size factory, judged by floor area and the number of workers, and judged by the nature of the work, the volume of output, and the array of tools and equipment, it is much more important.

Messrs. Arnott and Harrison specialise on the quick production of the immense number of metal parts and fittings required by the modern aeroplane. Some idea of the work may be gleaned from the fact that they are usually engaged on producing between 500 and 900 *different* articles, each one of which has its special patterns, and most of which requiring special jigs and tools. Practically every article entails high accuracy.

It is hard enough to run a factory engaged on the production of a few dozen standard articles, but it is vastly more difficult to keep over 500 different processes going. Nor do all the articles run along indefinitely on standard lines. Changes and modifications are frequent, and at any moment new articles may be required with the intemperate haste which characterises the aircraft manufacturer in war time.

Messrs. Arnott and Harrison have been very ably seconded by their co-director, Mr. F. H. Wright, who joined the board in the early days of the war, and has materially assisted them to arrive at their present successful position. He has had entire charge of all buying, which, under present Government restrictions, requires a man of sound business ability.

A Good Story.

Talking of intemperate haste I heard of a good story about a factory not far from Arnott and Harrison's.

The head was asked to contract for the delivery of various parts and fittings to an aircraft manufacturer, who at all costs must have them by a certain day, for the whole construction programme would depend on this. The contractor being a man of his word worked night and day to produce the goods, and he delivered them up to time—only to find that the aircraft manufacturer had not started to run his factory yet!

Men of their Word.

Messrs. Arnott and Harrison have made their way largely by the reliable manner in which they keep their contracts. But undoubtedly the chief cause of their success is the enterprise and resource which they show in producing any metal part required. Some of the designers of aeroplanes are wonderful fellows who have quite a hobby for specifying fittings of the utmost intricacy.

The average engineer or metal worker is non-plussed by many of the patterns, which look as if they had been evolved under the influence of Jigsawitis. Mr. Harrison comes of engineering stock, and before the war he was in the motor industry. Mr. Arnott is a clever engineer of wide experience, and between them they make a success of work which few factories could handle.

Ordinarily, Mr. Harrison keeps himself concerned with the managerial side, and he is undoubtedly a man of sound business sense. His partner ordinarily devotes himself to the work of production; but each partner is, as it were, interchangeable, and in emergency one can do the work of the other.

Here we see that special difficulties arising from a particular kind of work have brought to the top men who have special aptitudes for it. Only by the usual competitive system could this have been arrived at. Other men and other methods could accomplish the work, admittedly, but nothing would be more happy or facile than the manner in which Messrs. Arnott and Harrison accomplish it, for the reason that they know the best way of doing it.

The Right Kind of Britisher.

If I could describe the factory in detail I could say something about the very many interesting and clever devices which go to the make up of the modern aeroplane. The Germans know about these devices, of course, and we have reason to know how clever the Germans are at this kind of work. But I am glad to say that we can beat them at it.

Get the right kind of British metal worker, and treat him properly, and you get the finest work in the world from him. He may not be up to Henry Ford's ideas in quantity production, but he is more of the artist in that he can adapt himself to frequent changes of pattern.

Efficiency and Adaptability.

The Arnott and Harrison factory is notable for the efficient manner in which it copes with quick changes of the work programme. Bear in mind this is not experimental work of which only a few articles of each kind are required. The firm must get going on quantity production of each new item with the least possible delay, and they must be ready to switch over to new work at very short notice.

This factory is a mobile concern, so to speak, and the management is exceedingly versatile. How valuable these characteristics are at the present stage of aircraft engineering need not be demonstrated.

They give us almost an ideal, for we can safely go on making improvements in detail if we are backed by organisations which can guarantee rapid production in quantity of any and every new item required. In this way construction work is not hampered, and we keep on a steady improvement in design.

A Self-Supporting Shop.

One secret of success in the Arnott and Harrison factory is the extent to which they make their own tools and appliances. The workers seem to be encouraged in producing new devices, and I was shown several very clever tools and instruments designed by one of the men, who seems to be a genius in this direction. And as the principals keep in direct touch with the employees, every service of this kind gets ready recognition.

Sometimes I wonder what many of the factories will do after the war, but after going through the Arnott and Harrison works I had no misgiving about them. They could turn with success to well-nigh any branch of engineering where good work and quick production are essentials. The country would be all the better if it had many men and works of this kind, for after the war there is going to be some stiff competition.

ALUMINIUM PRICES.

The Minister of Munitions announces that the control price of aluminium ingots of 98-99 per cent. purity will be reduced, as from Jan. 1st, 1919, from £225 per ton to £200 per ton, carriage paid to consumers' works.

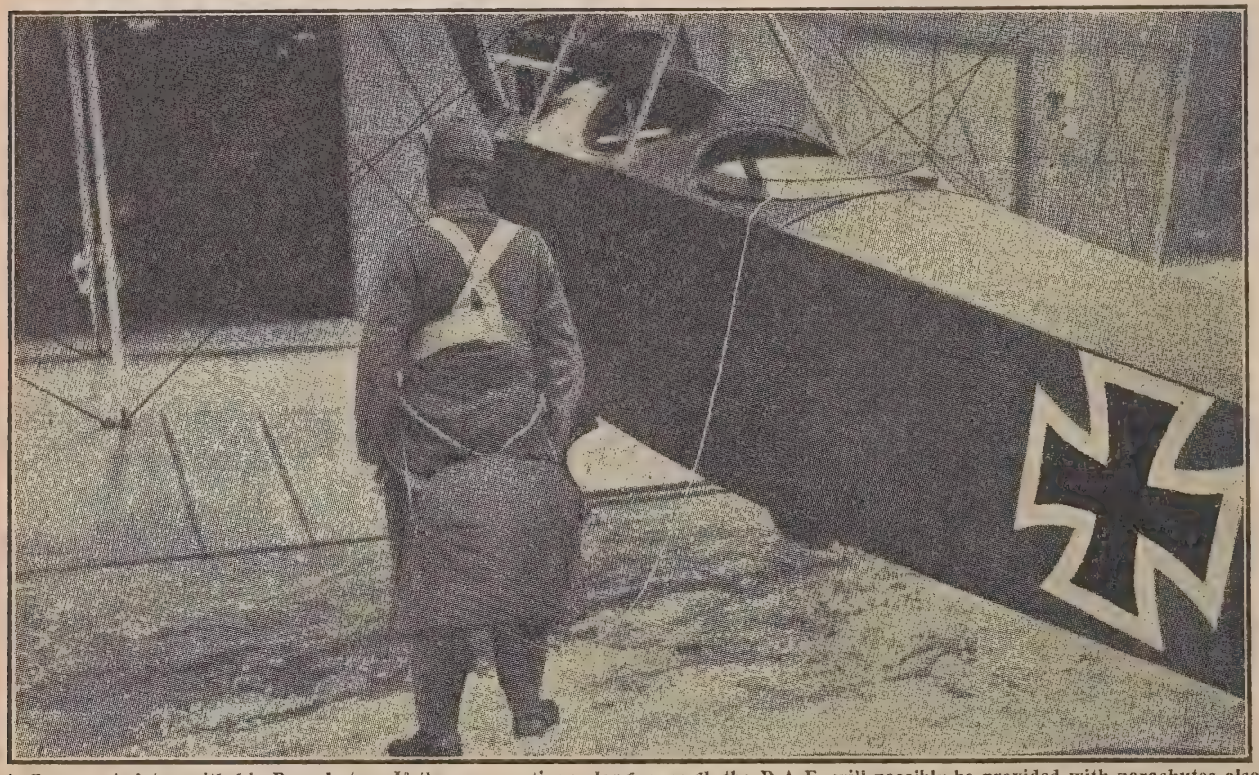
The prices of remelted aluminium scrap and swarf ingots will remain as at present.

IMPORTED FLAX.

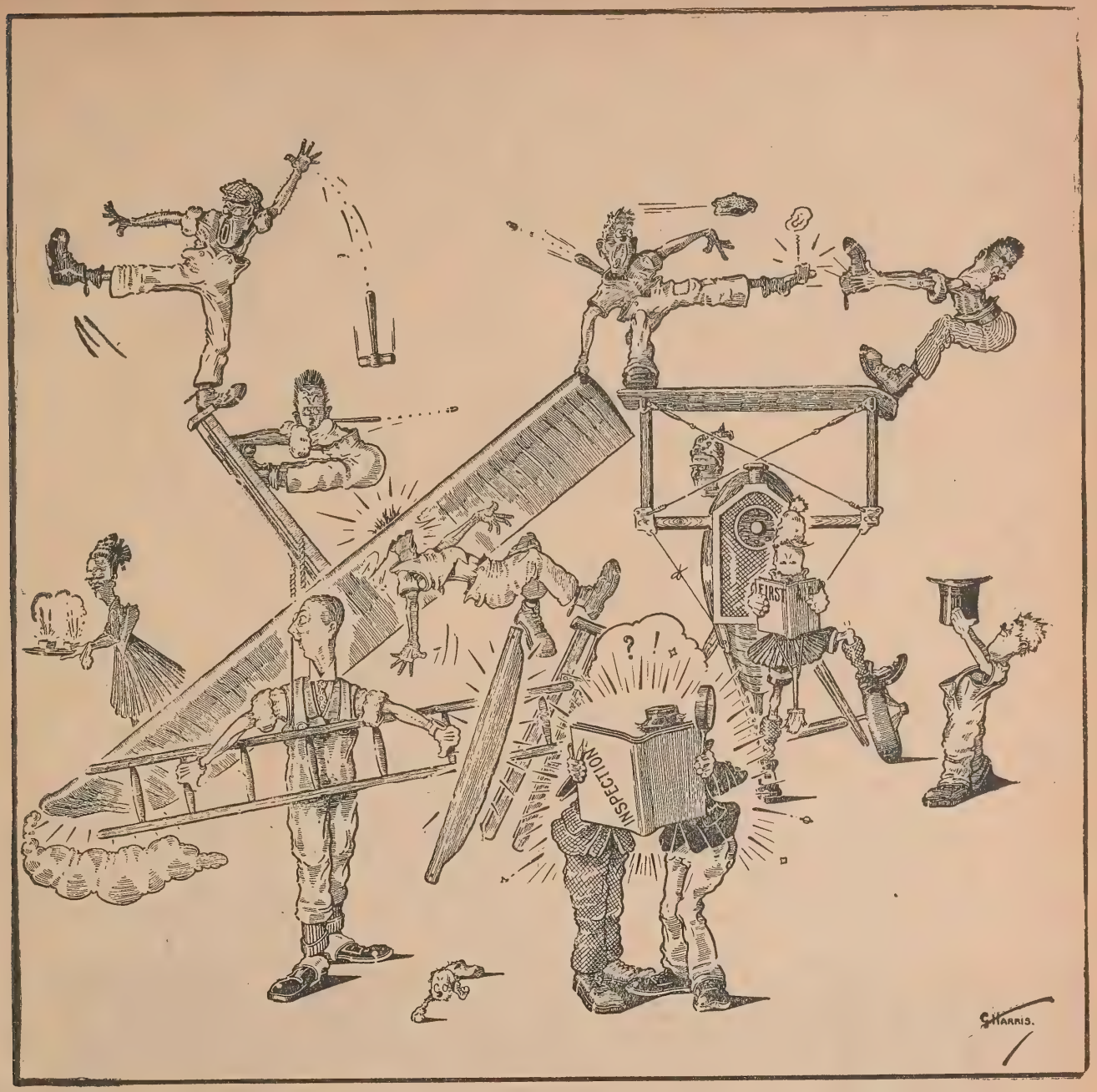
The Flax Control Board announced on Sept. 30th that by the Imported Flax (Dealings) Order, 1918, the purchase of British Flax and Tow not yet imported into the United Kingdom is prohibited.

It is further provided that the purchase of any Flax or Tow not yet imported into the United Kingdom, except Dutch and Russian Flax or Tow, is permitted without permits in the case of all persons not being consumers of Flax and subject to permits in the case of consumers. The sale of such Flax is prohibited except under permit.

Application should be made for permits under this Order to the Flax Control Board, Scottish Sub-Committee, Victoria Chambers, Dundee, or Irish Sub-Committee, 31, Wellington Place, Belfast.



A German Aviator with his Parachute. If the war continues long enough the R.A.F. will possibly be provided with parachutes also. The method of wearing suggests that in the event of a mere bad landing it may provide a useful collision mat.



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THE SALMSON TYPE 2 MILITARY AEROPLANE AND THE SALMSON 9-CYL. 250-H.P. ENGINE.

Hereafter follows a translation of an interesting article by the engineer Schwager of Charlottenburg in the German journal "Der Motorwagen" giving an extensive description of the new 250 h.p. radial Salmson aero engine, and the main figures of the aeroplane of which it is the power plant.

This is the reconnaissance biplane "Avion Salmson Type 2," and the accompanying drawings of the engine give a good idea of the compactness and the short "through" length of the installation of the power plant with consequent advantages.

Figures are not available of the weight and fuel consumption of the engine, yet the former cannot be very high, as may be judged from the following figures of the aeroplane:—

Area of main planes	37.27	sq. metres.
,, elevator	4.15	,,
,, rudder	1.33	,,
Diameter of airscrew	2.8	metres.
Pitch of airscrew	2.1	,,
R.p.m. of airscrew	1460	
Weight of empty aircraft	780	kilogrammes.
Load in acceptance flight	510	,,
This was made up as follows:—		
Fuel for a flight of 3 hours' duration (189 kg. petrol, 11 kg. oil)	200	,,
Pilot and observer	160	,,
Machine-gun with mountings and ammunition	68	,,
Instruments	10	,,
Wireless and lighting equipment	72	,,

Total useful load 510 kilogrammes.

Climb Performance:—

1,000	metres in	3	minutes	18	seconds.
2,000	,,	7	,,	13	,,
3,000	,,	11	,,	42	,,
4,000	,,	17	,,	20	,,
5,000	,,	27	,,	30	,,

Horizontal Speed:—

At 1,000	metres altitude	186	kilometres	per	hour.
2,000	,, ,,	181	,,	,,	
4,000	,, ,,	173	,,	,,	
5,000	,, ,,	168	,,	,,	

Factor of safety: 7.5.

Thus the performance of the engine is pretty astonishing.

The 250-h.p. Salmson Aero Engine.

Compared with the former Canton-Unné motor of radial type, dropped in 1917 and 1918, the new edition of the Salmson shows improvements and simplicity in many ways.

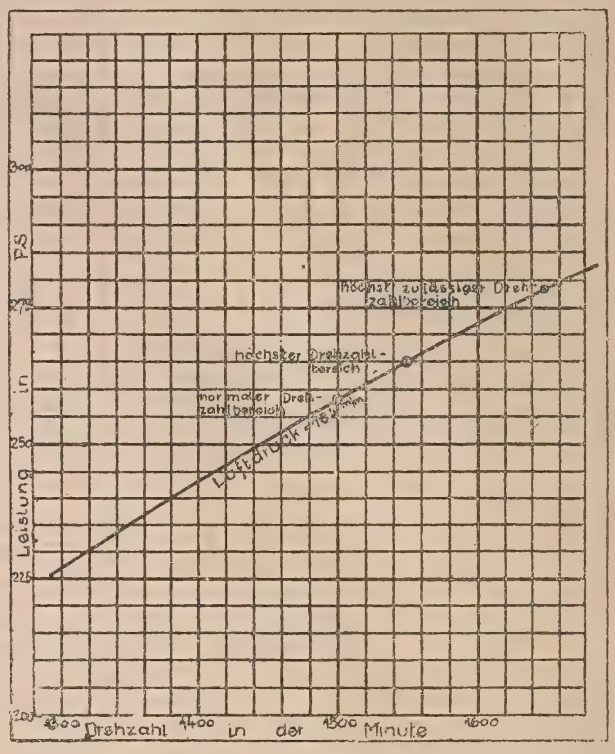


Fig. 1.—Power Curve of the 250 h.p. Salmson aero engine, showing powers developed at normal, full throttle and highest permissible speeds. The last would seem to refer to the possible addition of a reduction gear.

The development of high performance engines for war aeroplanes leads, undoubtedly, from the vertical model to the radial edition. Because of this development the new Salmson aero engine is very suggestive, and thus worth while to describe at some length.

Fig. 2.

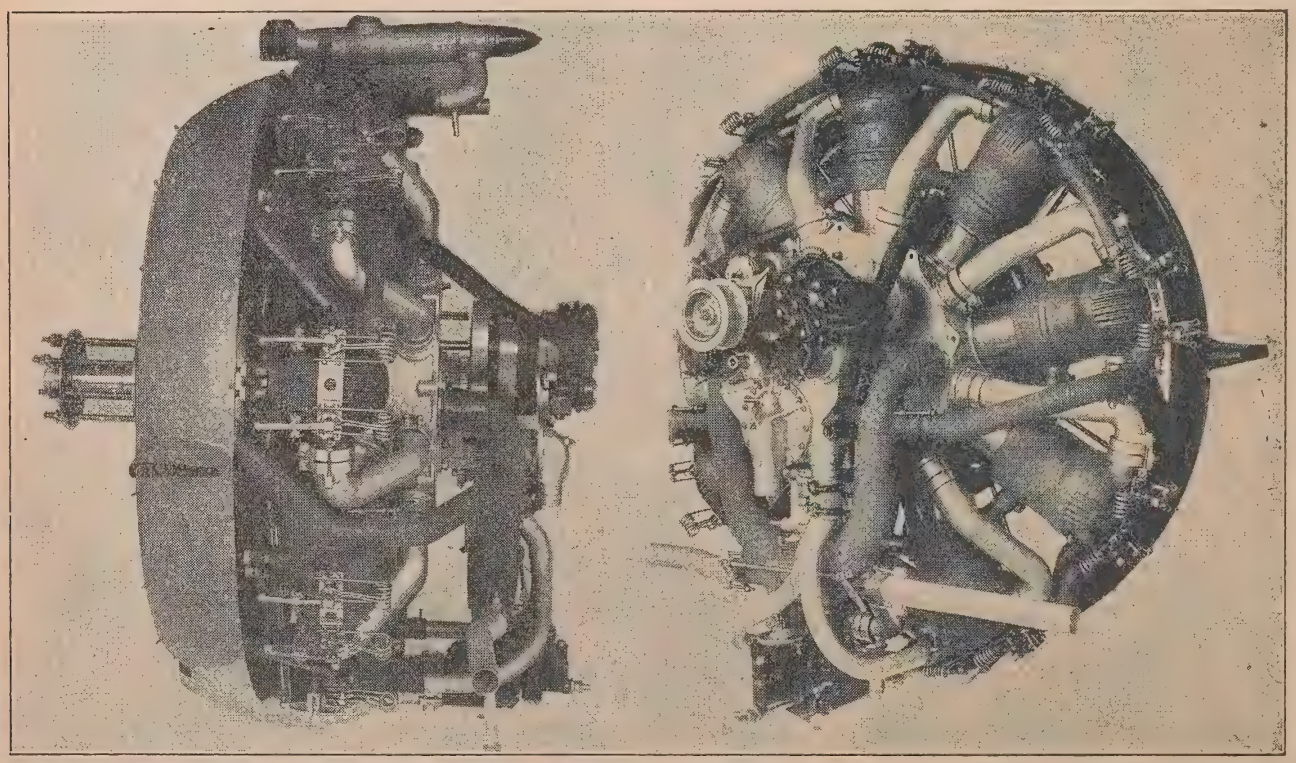


Fig. 3.

The 1917 Salmson Engine showing how the exhaust manifold is arranged to fit the front of a fuselage of circular form.

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Fig. 4.

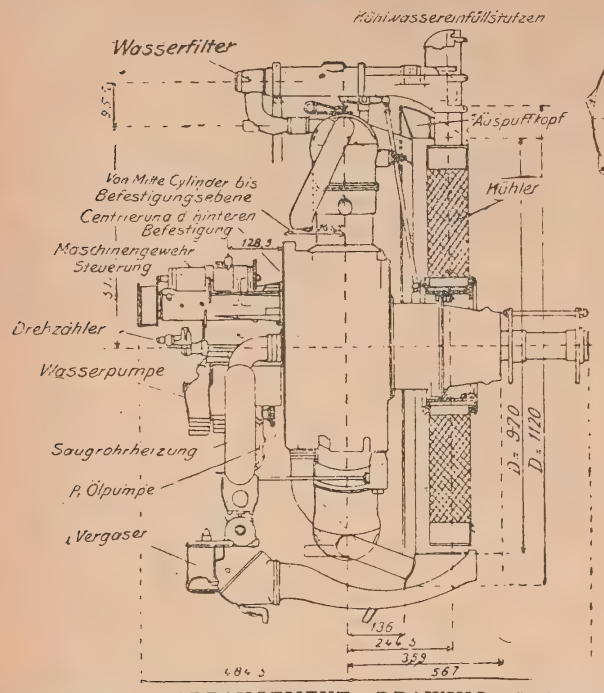


Fig. 5.

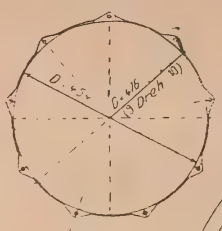
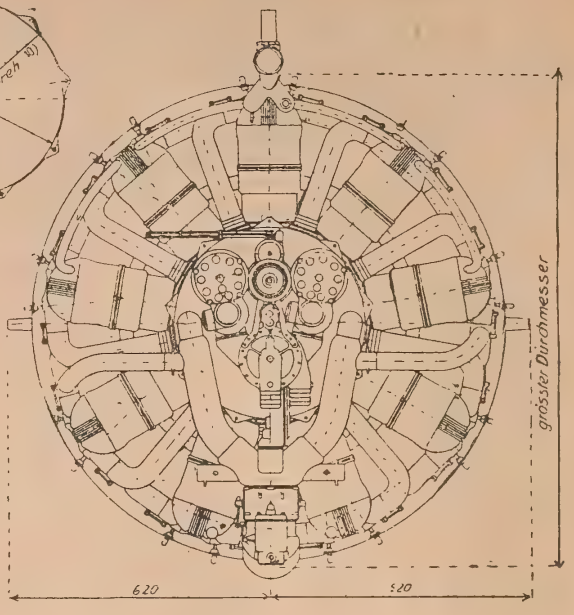


Fig. 6.



GENERAL ARRANGEMENT DRAWING.—Kühlwasserein füllstutzen = Water inlet pipe connections. Wasserfilter = Water filter. Von Mitte, etc. = From middle of cylinder to backplate level. Centrierung, etc. = Centring of the rear mounting. Maschinengewehr Steuerung = Machine-gun timing. Aüspuffkopf = Exhaust head. Kühler = Radiator. Drehzähler = Tachometer. Wasserpumpe = Waterpump. Saugrohrheizung = Hot water jacket on inlet pipe. Olpumpe = Oilpump. Vergaser = Carburettor. Grösster Durchmesser = Greatest diameter.

The engine in question has a normal number of r.p.m. of 1400-1500 with nine cylinders of 125 mm. bore by 170 mm. stroke, and a nominal performance of 250 h.p.

The connecting-rods are attached to a master rod on the well-known principle of the Gnome rotary engine. The great length of the connecting-rods favours this arrangement without any drawback in respect to the uniformity of the stroke, and offers good balancing of the masses.

The number of r.p.m. has been chosen as high as is possible with direct airscrew drive. Yet measures appear to have been provided for a possible use of the reduction gear, to increase the number of revolutions, as is intimated by the performance curve in Fig. 1.

The cylinders, arranged radially, are mounted round a two-part crankcase. The crankshaft rests on each side in a ball bearing, and is at the rear end provided with a double thrust bearing to take the airscrew pressure. On the front side of the crankcase the timing gear wheel box is mounted, enclosing a second bearing for the support of the airscrew shaft. The back half of the crankcase is provided with brackets for the mounting of the water and oil pumps and of the two magnetos.

The carburettor is arranged below the two pumps and is connected with a gas distributing channel, cast in the rear part of the crankcase, by means of two tubes, heated by the radiator water. From the gas channel nine suction tubes lead to the single inlet valves.

Nine tubes bring the exhaust tangentially to a collector, formed as a ring and arranged in front of the cylinders, which corresponds well with the circular fuselage form.

The engine is mounted by means of a centre plate with fixing eyes on the back half of the crankcase.

The general arrangement is evident from the Figs. 2 and 3. Further, it is apparent that the total apparatus is made very compact by the use of a ring-form exhaust collector, and of a round front radiator, long tubes, and other projections being thus avoided.

Figs. 4 to 6 give the general dimensions which come out very favourably in relation to performance, as well as in regard to diameter and even more in respect to length.

Further details are shown in Figs. 7 and 8.

The Crankcase.

The crankcase is made of an aluminium alloy, and is divided at the level of the connecting rods. Though it should apparently receive no greater strains than a single-cylindered engine, many ribs are provided as well as long guides for the centring of the cylinders. The housings for the ball bearings are strengthened by linings of a harder material. The front part has a centring for the mounting of the gear-wheel case, and of an oil sump for the return suction pump.

The back half has inside an arrangement for supporting the thrust-block with double ball bearings and its lubrication system. Outside is the centring with fixing eyes for the mounting in the aeroplane. The gas collector has been cast in one piece with the back half of the crankcase.

The Cylinders.

The cylinders are made of steel and are provided with welded water jackets of sheet steel. Much attention has been paid to giving the compression space the right form, and the valves sufficient area. The valve spindle guides are partly cooled.

The plugs are specially protected against oiling and overheating.

The cylinders rest in the crankcase by means of a base with

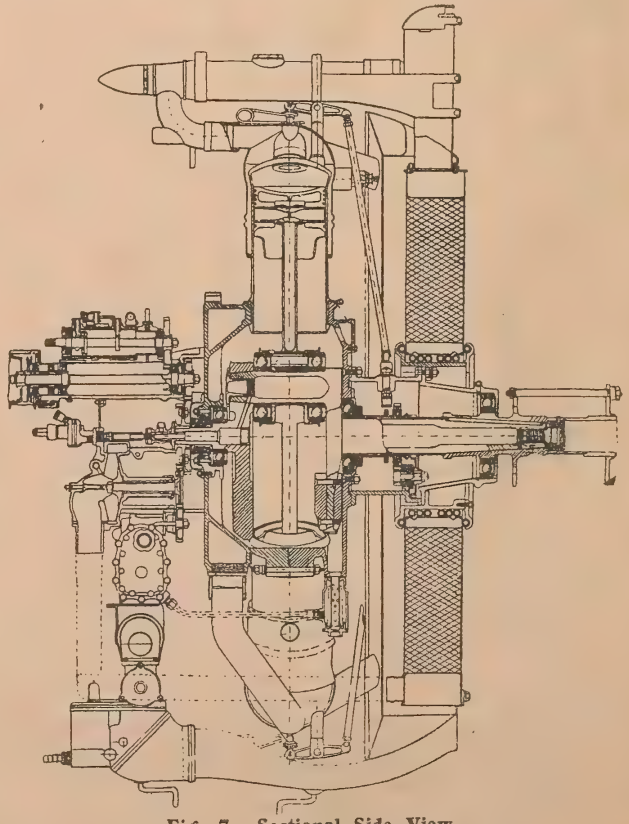


Fig. 7.—Sectional Side View.

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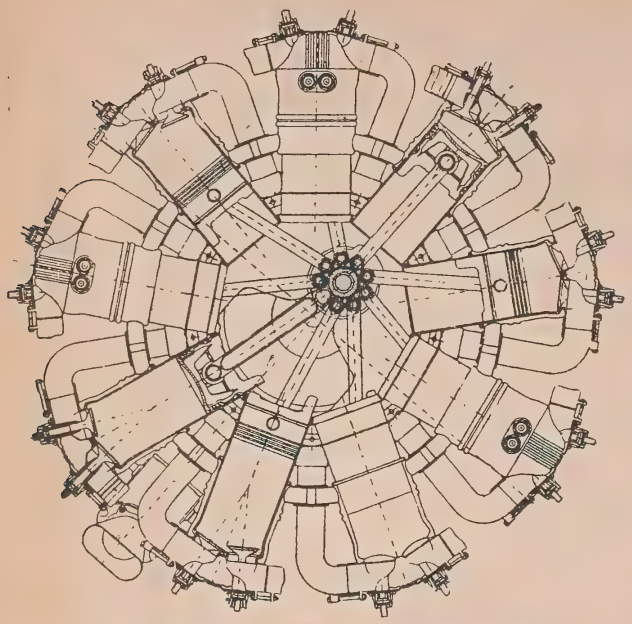


Fig. 8.—Part Sectional Diagram of Engine.

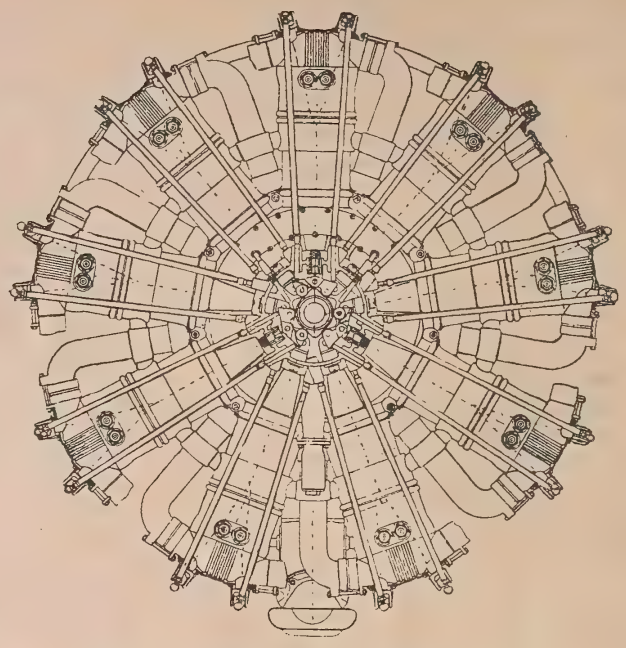


Fig. 9.—Sectional View of Valve-timing Gear.

large jointing surfaces and are secured by stay bands of key section.

The pistons are cast of a special aluminium alloy, suitable for this purpose in respect to lightness, strength and anti-friction. The inner ribs are reduced to a minimum number, but are of specially large dimensions to avoid any deformation. Four cast iron piston rings, 3 mm. thick, are provided, the fourth being arranged in the opposite end of the piston as a scraper.

The gudgeon pin turns in the piston bearings, so that the pin cannot cause a deformation of the piston. The connecting rods are made of compensated silver steel. Their length is sufficiently great to give a small deviation. Only the main connecting rod turns on the crank pin, while the eight others are attached in the well-known way. The section of the main connecting rod is a double T form, that of the other ones circular.

The Crankshaft.

The crankshaft is made of chrome nickel steel in two pieces. The airscrew hub is mounted on the front part. The coned front part is connected with the rear part by means of a sort of head screw through a cone ground in at the crank pin.

The diameter has been very amply chosen and drilling is employed to a fair extent for the purpose of lightening. To attain a balancing of the masses minutely counter weights are arranged on the crank webs. Each engine is specially tested with all its moving masses for complete balancing.

All main bearings are amply dimensioned and are on ball-bearings.

Though this arrangement turns out heavier than journal bearings it has been preferred owing to its smaller sensibility to insufficient lubrication and because of the smaller oil consumption.

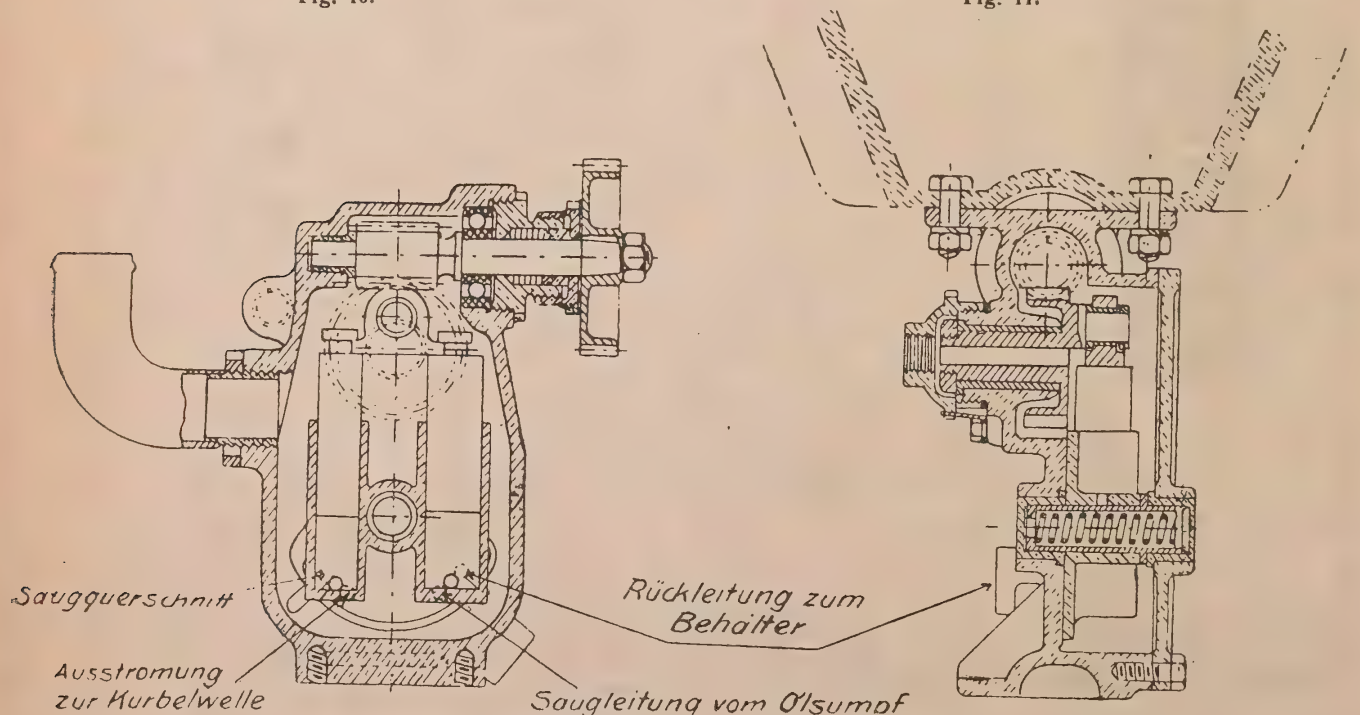
The connecting-rod bottom end bearings have ball-races with a special form of cage, and are tested separately under double load before the mounting. The thrust ball bearing mounted on the stern end of the crankshaft will take up the load of either a propeller or tractor airscrew.

The Valve Gear.

As is evident from Fig. 8 one valve each is provided in the cylinder head for the inlet and the exhaust, being manipulated by means of rocker levers and adjustable tappets from one single camplate. The latter is mounted free on the front crankshaft pin, and is provided with six cams, each two of which lie in one level.

Fig. 10.

Fig. 11.



Sectional Front and Side Views of Oil Pump.

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Fig. 12.

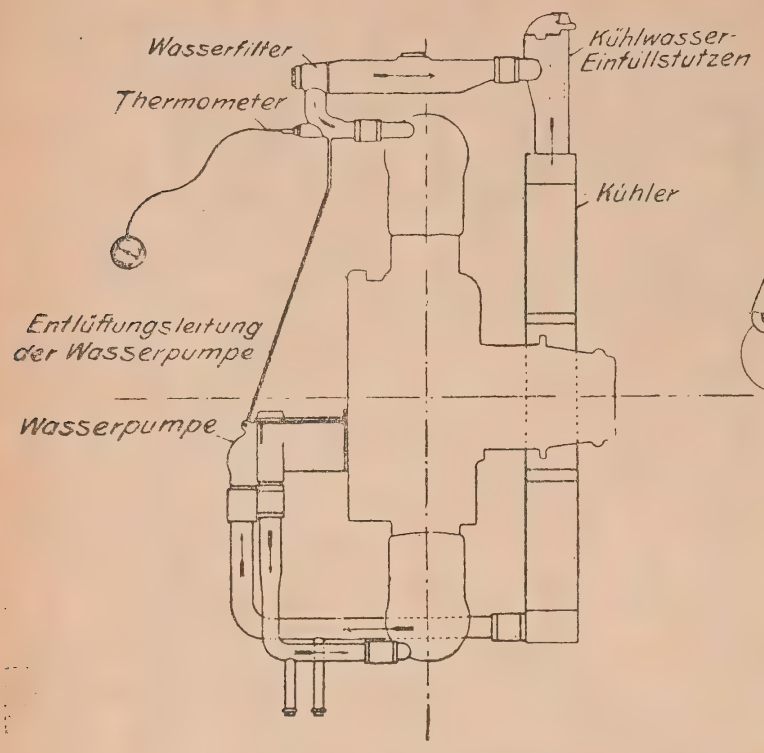
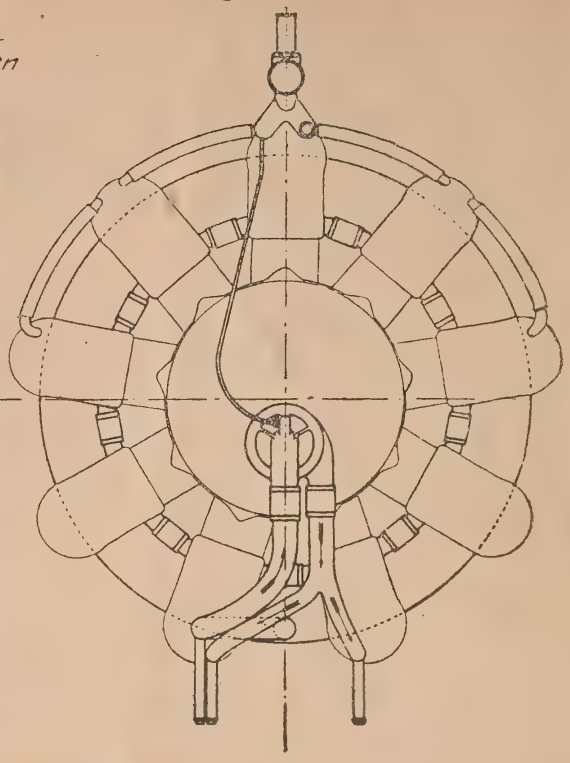


Fig. 13.



General Scheme of Water Circulating System.

Each pair of cams operate in turn the inlet and exhaust valves of three cylinders. During one turn of a pair of cams each valve of the group of three cylinders is operated twice. As two valve openings correspond in the four-cycle operation with four turns of the crankshaft, the gear ratio is thus 1 to 4 between cam and crankshaft. The cam is driven by means of a gearing cut in the crankshaft and two intermediate gear-wheels, mounted on the crankcase.

The transmission of the lift of the tappets by the cams is carried out by means of rocker levers and well-supported valve guides. All of which is housed in an aluminium chamber on the front side of the crankcase.

As the cams are accurately cut in the machining operation it suffices to adjust one cylinder to regulate the whole cam operation.

Lubrication.

The lubrication takes place by means of oil circulating under pressure from a piston pump, mounted on the rear side of the engine below the water-pump.

This pump has two cylinders (Figs. 10 and 11) one to force the oil into the crankshaft, and a second to bring the oil back to the oil tank from the sump cast in the front part of the crankcase. The oil-pump operates completely immersed in oil in an enclosed chamber that is connected with the oil tank by an amply dimensioned pipe from which the one piston sucks direct. The drive takes place by means of a worm-drive, lying inside the pump through an outer gear drive from the water-pump gear driving wheel. The wheel engaging in the worm is provided with a crankpin that operates direct on the two pistons, the pistons developing with the corresponding cylinders an oscillating movement whereby the inlet and outlet sections are operated. Thus valves and slides are avoided.

The motor is supplied with oil through the back crankshaft pin by means of a sort of casing running therefrom to the connecting pins wherefrom it is distributed farther on by the centrifugal force.

The inner drilling of the main connecting-rod big end bearing head is, in spite of the ball-bearing, formed as a journal surface, provided at the points of the main and auxiliary rods with drillings, through which the oil gets to the connecting and piston pins, as is usual with stationary engines. The oil coming out by the various bearings is slung round by the moving parts in the crankcase and lubricates in this way the cylinders.

The oil flung by the crankshaft and the pistons is again picked up by corresponding pockets to lubricate the cams, the crankshaft bearings and the thrust bearing. The supply of the camshaft case with the oil from the corresponding oil-catching pocket goes through two lines of piping.

Fig. 14.

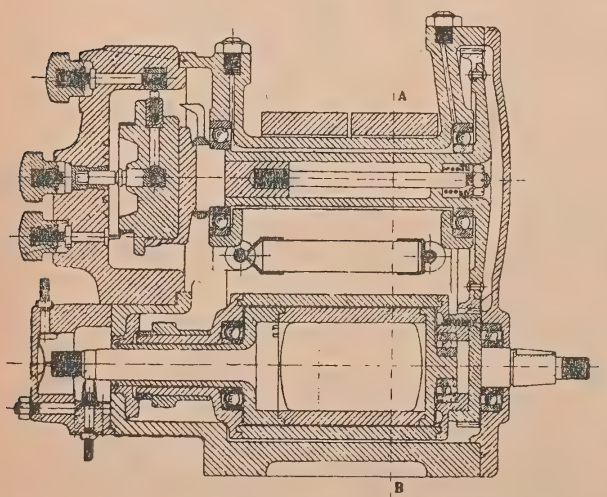


Fig. 15.

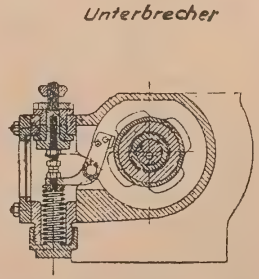
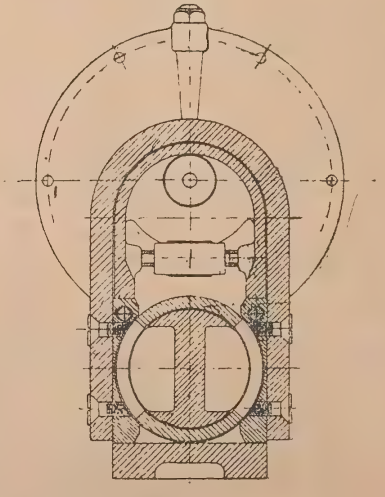


Fig. 16.



Sectional Side and End Views of Salmson Magneto with Sectional View of Contact-breaker.

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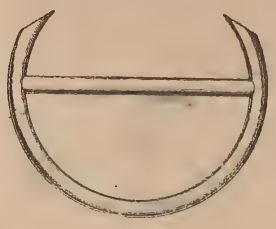
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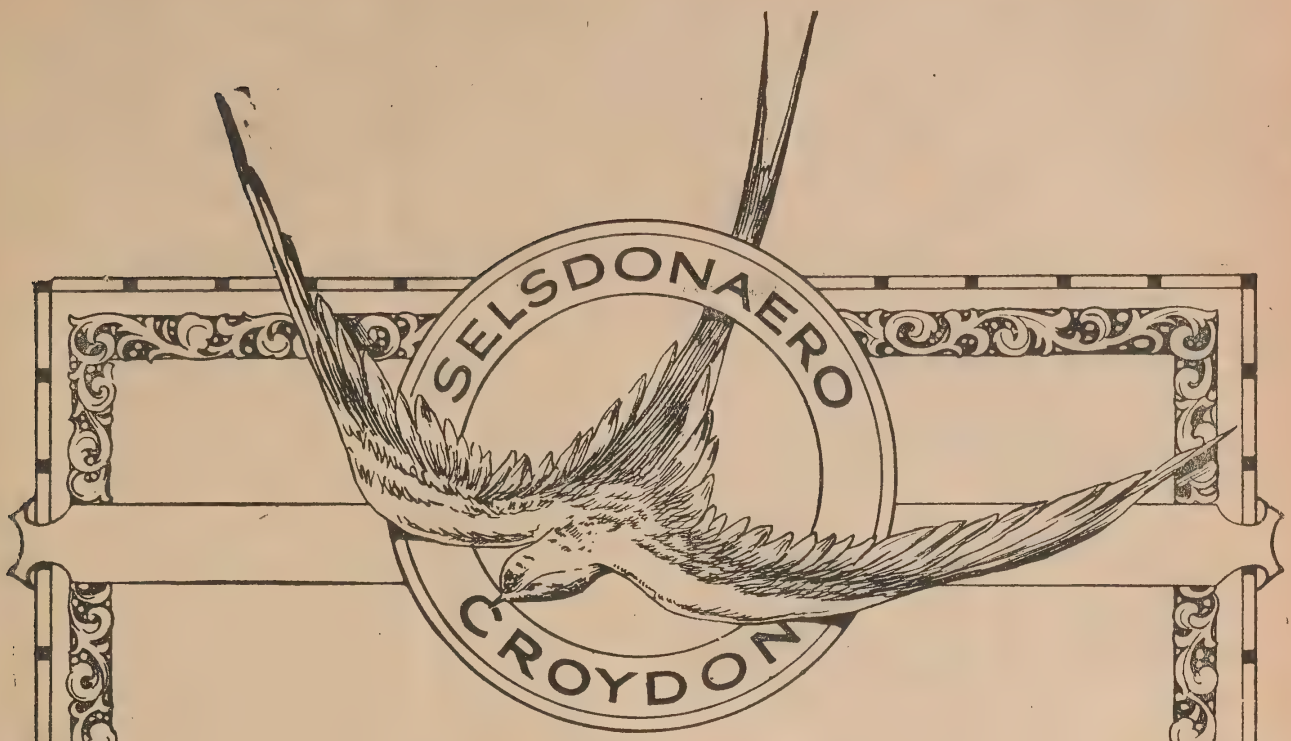
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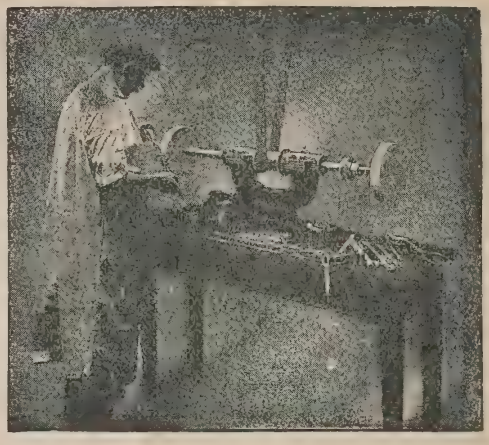


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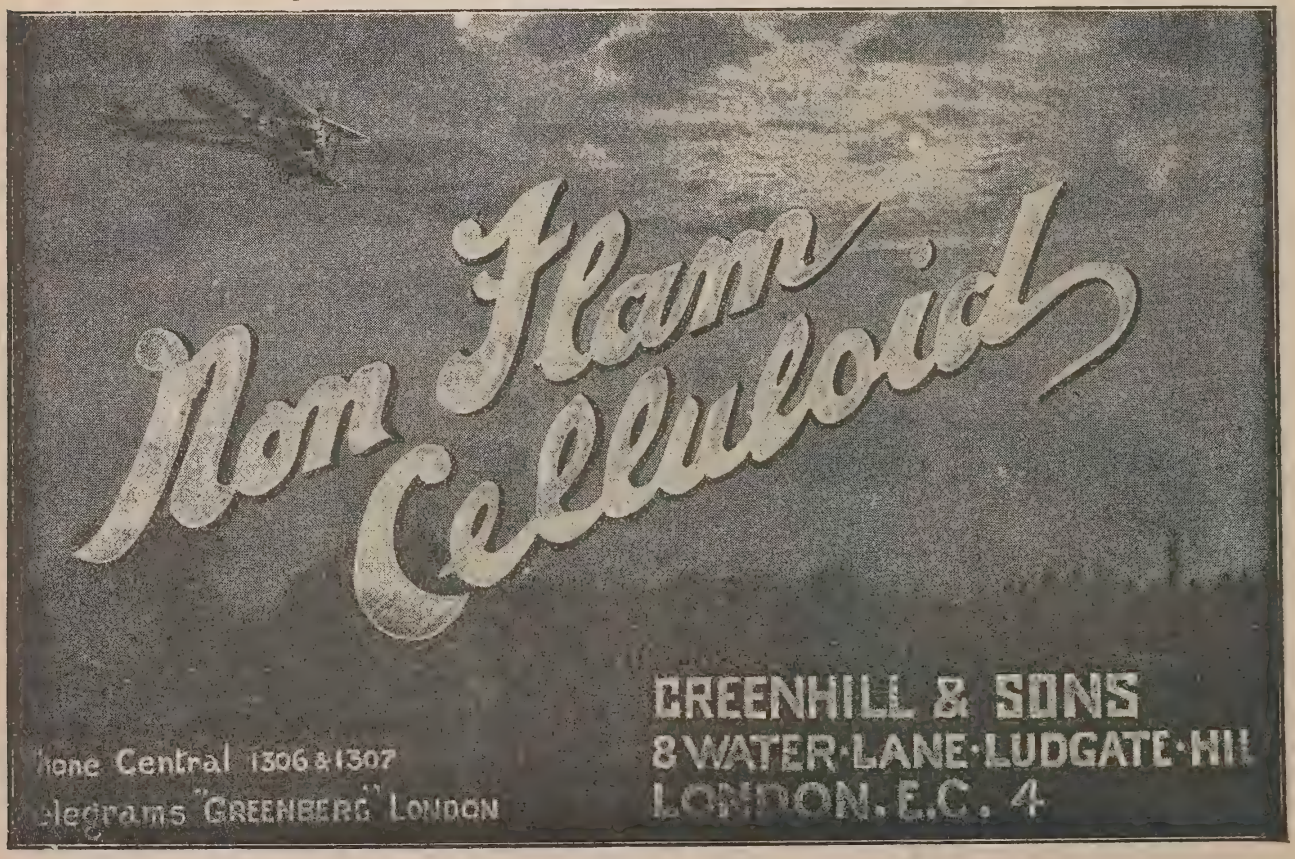
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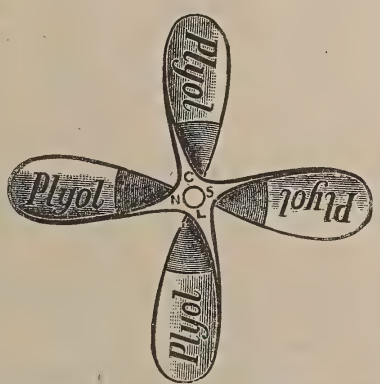
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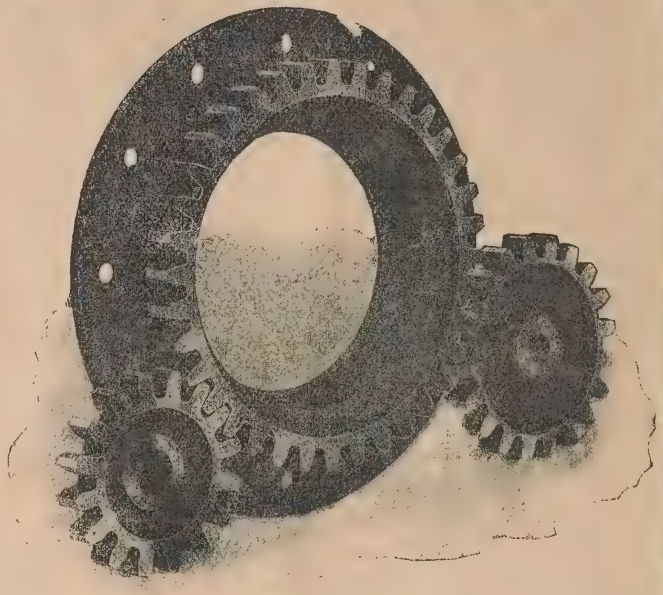
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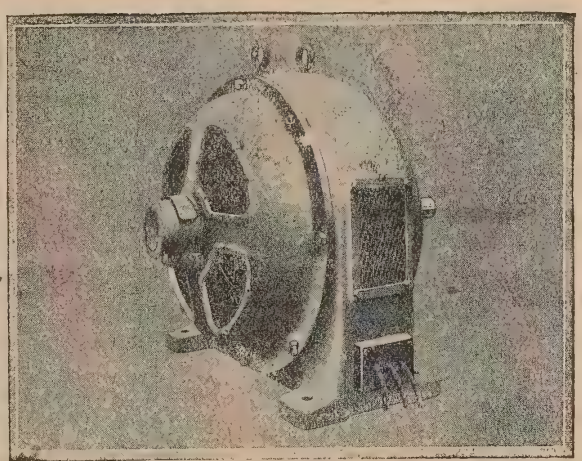

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The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1. Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co, 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent" Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S W.19 "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Avenue. 1432. Redditch 61.

Watchmakers and Jewellers— (Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
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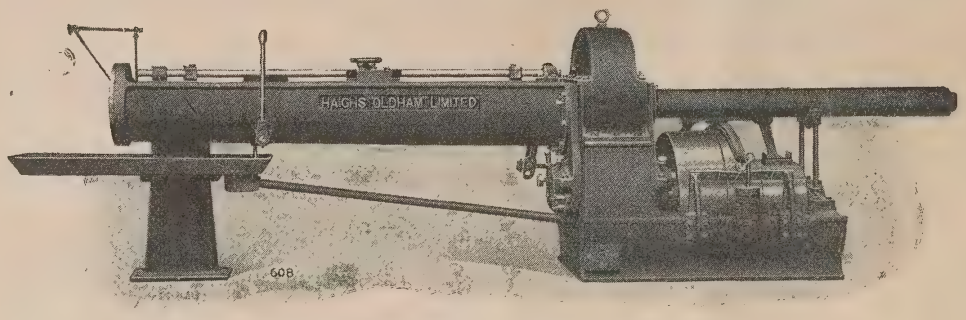
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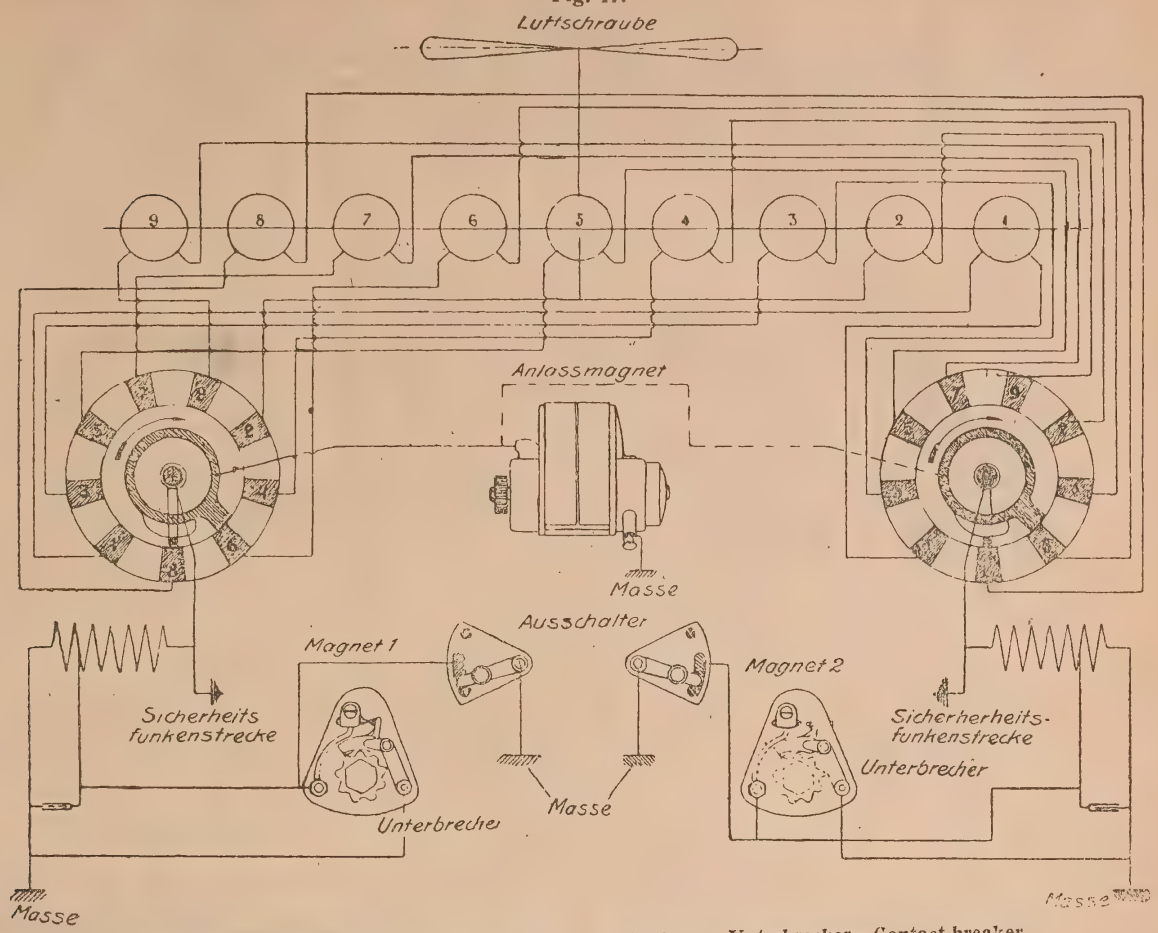
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Fig. 17.



WIRING DIAGRAM.—Sicherheitsfunkenstrecke = Safety - spark gap. Unterbrecher = Contact-breaker. Ausschalter = Switch. Masse = Earth. Anlassmagnet = Starting magneto.

The excess supply of oil from the pump is sucked away from the oil sump, cast in the front half part of the crankcase and returned to the oil tank.

Water Circulation.

The water is circulated by means of the usual centrifugal pump, which is mounted on the back half of the crankcase and driven by gears from the crankshaft. In leaving the radiator the water enters the pump through the cap, disperses through tube branches to the two lower cylinders 1 and 9, and therefrom flows through the rest of the cylinders, which are connected with each other by means of rubber sockets. This connection between the various cylinders is so worked out that the formation of steam-pockets is impossible, as is evident from the Figs. 12 and 13.

The two water currents meet in the top cylinder No. 5, from which the water goes to the radiator. An exchangeable filter is provided between the motor and the radiator to prevent incrustation.

The tachometer is driven from the crankshaft by a gearing reduction of 2 :1, and is mounted on the water-pump cap.

Ignition.

There are two magnetos for the ignition, of Salmson manufacture, having stationary armatures and rotating casing. As the magnetos produce four sparks in one revolution the relation of the revolution number to that of the crankshaft is 9 :8. The magnetos are driven by a spur wheel transmission gear from the crankshaft. No spark variation arrangement is provided. Further details of this simple and interesting magneto are to be seen in the Figs. 14 to 16 and in the wiring diagram 17.

Finally, a combined drive for the timing the fixed machine-gun and for an alternating current generator is provided on the rear crankcase, half appearing pretty voluminous, so far as the machine-gun timing is concerned, while the drive of the wireless generator is by means of a simple belt pulley with a cone friction clutch.

Carburation.

The carburettor is a Zenith twin model with gas regulation for great altitudes, and with a common float chamber. The method of operation is the same as in the rest of the well-known Zenith carburettors with main and slow-running jets and compensator.

The arrangement of these jets has been chosen so that the various positions of the aircraft do not influence the ratio of mixture. At the same time the jet arrangement, shown in Fig. 18, permits a very simple adjustment of the carburettor without dismantling.

Besides the above-mentioned jet arrangement, the carburettor is further provided with an equipment for the regulation of the ratio of mixture for altitude, a simple cock effecting connection of the channel between the fuel jets and the inner air nozzle with the air pressure outside. When this cock is opened the pressure at the mouths of the jets rises, i.e., the pressure gradient between the float chamber and the jet mouths is

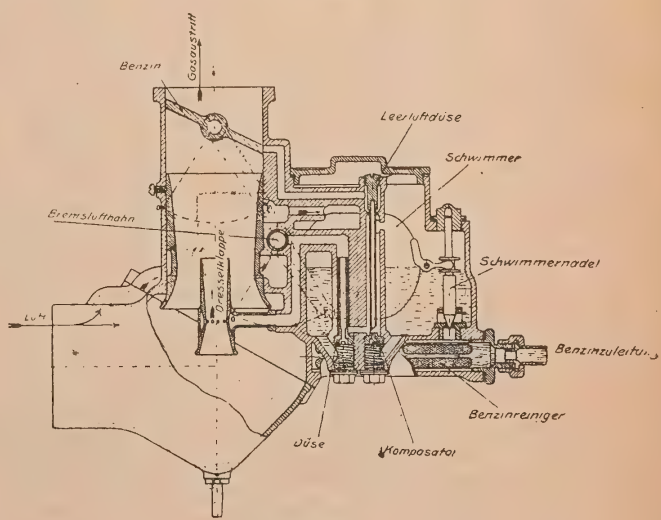


Fig. 18.

SECTIONAL DIAGRAM OF CARBURETTOR.—Leerluftdüse = Jet. Schwimmer = Float. Schwimmernadel = Float needle. Benzinzuleitung = Petrol pipe. Benzinreiniger = Petrol filter. Bremslufthahn = Aircock.

reduced; less fuel therefore leaving and the mixture becoming thereby weaker. This cock remains closed on the ground and is opened in relation to the climb of the aeroplane up to greater altitudes. As this cock to some degree reduces the fuel supply in the jets, it may well be called a mixture reduction cock. Similar is the effect of the German Pallas carburettor only in this case the air reduction section provided with a calibrated nozzle has a fixed adjustment. The piping scheme for petrol and oil, as shown in Fig. 19 is of interest, and will be understood without further explanation. It seems only worth mentioning how a pressure-free supply of the fuel has been attempted, to which end the somewhat elaborate installation of an air-pump in connection with a membrane petrol pump has been made.

Fig. 19.

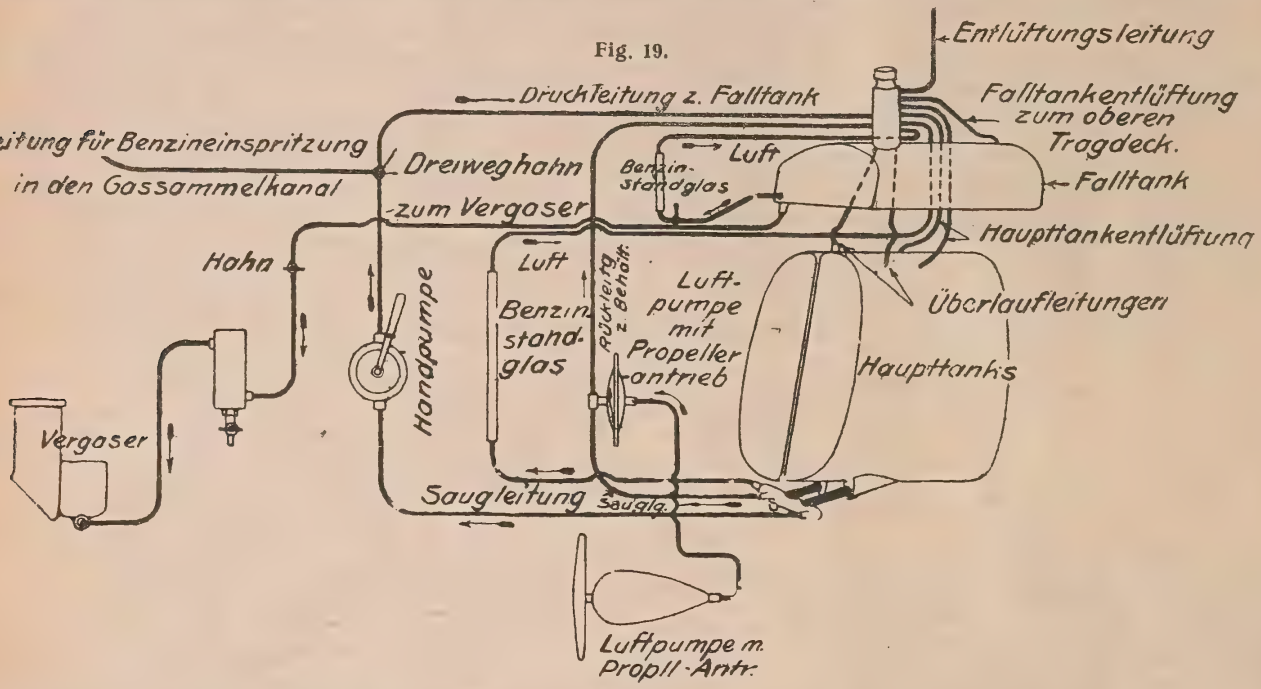


DIAGRAM OF PETROL SYSTEM.—Falltank = Gravity tank. Haupttank = Main tank. Dreiweghahn = Three-way cock.

AILERON CONTROL.

The amount of Aileron Control which should be given to a particular type of aeroplane depends upon the disposition of the masses about the longitudinal axis and upon the nature of the performance required. The action of the controlling forces is to make the machine turn about the longitudinal axis at the will of the pilot. The degree of sensibility is dependent upon the product of the area of the ailerons and their effective arm or distance from the axis.

Ailerons are always fitted at the wing extremities to make the arm as long as possible so that their distance from the longitudinal axis is fixed by consideration of wing area. The area of the ailerons may, however, be varied within limits by the designer to suit the requirements of the machine by using two or four ailerons and by varying the length and, in some cases, where an auxiliary spar is used, the breadth of each aileron.

The table shows an analysis of the Aileron Control of a number of machines, mostly German or machines now in enemy hands. Though it was impossible to get sufficient exact data to make the values given extremely accurate, the results do not deviate far from the truth and should be useful.

The constant "K" is obtained by multiplying the total aileron area by its arm and dividing the result by the total moment of inertia of the machine about its longitudinal axis. The constant is of use for comparison, and may also be used in design to find the aileron area when the arm and moment of inertia of the machine are known values.

The moments of inertia for the machines shown in the table were obtained by considering the components separately and adding the values obtained.

In the case of the fuselage the estimated mass was assumed to act at a mean radius of gyration "r" and "I" the moment of inertia was taken as equal to r^2M in the case of the single-engined machine "I" is small compared with the total "I" for the machine. The moments of inertia for the struts and landing carriage were found in a similar manner.

The value of "I" for the planes was obtained by integration.

The last column gives values for the angular acceleration of the machine about its longitudinal axis and is calculated for a speed of 60 m.p.h. with the ailerons set at 15 deg., which is about the maximum angle that can usually be obtained. The angular acceleration is proportional to the square of the speed.

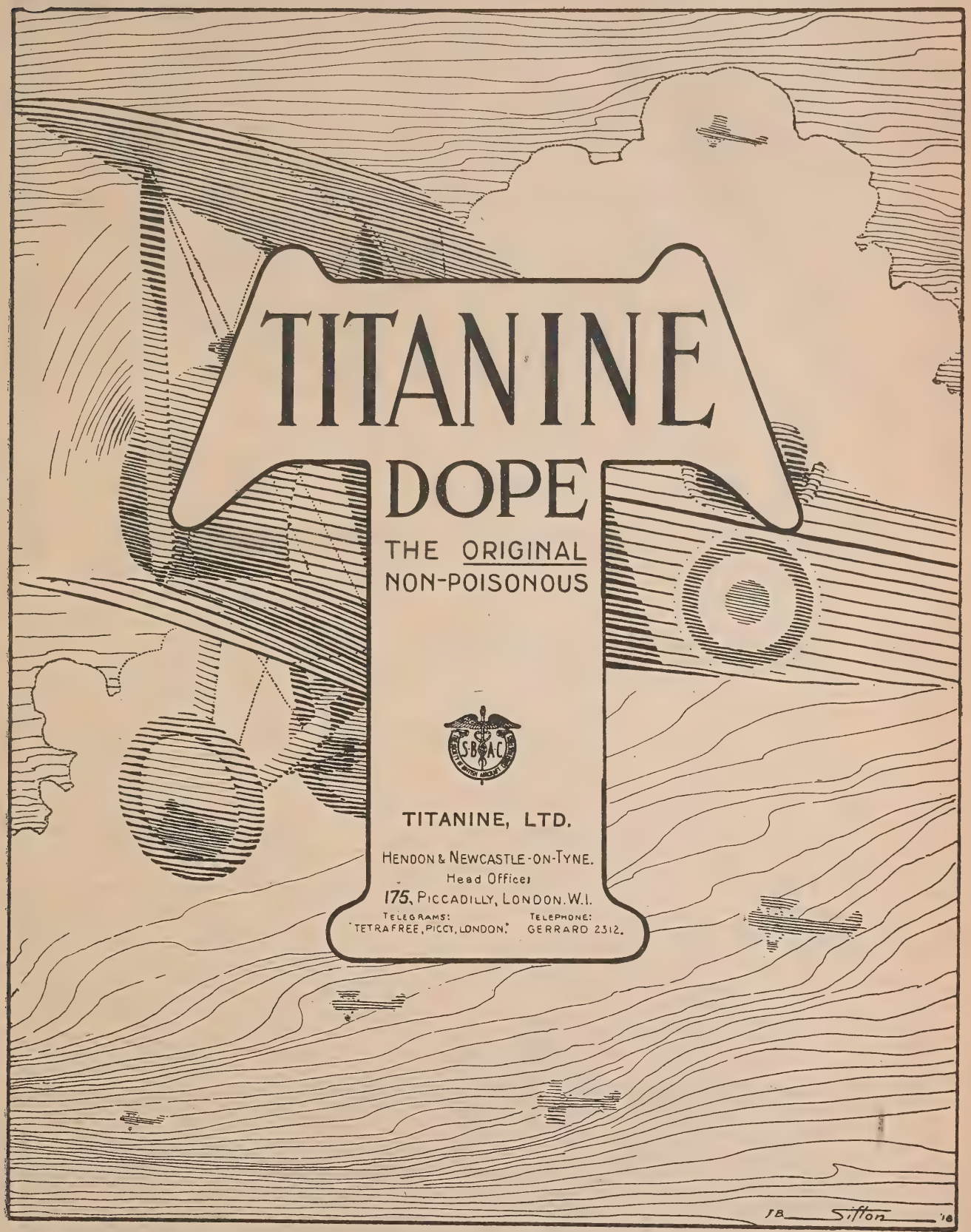
The machines tabulated may be divided into three classes—a, b and c.

(a) The heavy bombing machines which have engines and in some cases tanks at a considerable distance from the longitudinal axis of the machine; this class of machine necessarily has a very large moment of inertia and consequently "K" has a low value, though "K" could be made larger by increasing the aileron area and in most cases the number of ailerons if a larger value for the constant and angular velocity were required, but as these machines are not required to perform rapid and complicated manœuvres, but to carry a big load in the most efficient manner, they are designed with a small value for "K."

Class.	Machine.	Type.	Engine.	Number of Ailerons.	Aileron Area.	Distance of centre of Pressure of Aileron from C.L.	Total moment of Inertia.	Constant "K."	Angular acceleration in radians per sec.
					sq. ft.				
a	Gotha	Twin Engine Bomber	Two 260 h.p. Mercédès	2	55	33	900,000	.002	.49
a	A.G.E.	Do. ..	Do. ..	2	39	24	406,000	.0023	.543
b	Albatros c III ..	General Purpose Bomber	170 h.p. Mercédès	2	32.5	14.6	45,000	.0105	2 5
b	Rumpler c 14 ..	Do. ..	Do. ..	2	34	15.7	46,000	.012	2.8
b	D.F.W. Aviatak ..	Do. .	228 h.p. Benz	2	27	13.8	47,200	.0078	1 88
c	Sopworth Triplane	Scout ..	110 Clerget ..	6	33	11	12,000	.0275	6.6
c	Nieuport	Do. ..	80 Le Rhone ..	2	12.6	9	6,500	.0175	4.2

(b) The second class includes "General Purpose" machines, such as light bombers, battle planes and observation machines. The machines which are required to have a big manœuvring capacity have a large "K" value.

(c) The last class includes scout machines which require a very large manœuvring capacity and proportionate high value for the constant.


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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records.

Patents Applications.

Becroft, H. F. Level-indicators. No. 15419. Sept. 23rd.
Bowden, W. Altitude-indicators for aeroplanes. No. 15426. Sept. 23rd.
Claxton, J. O. Instrument for calculating compass course and ground speeds, etc., when flying. No. 15417. Sept. 23rd.
Dewar, J. Construction and erection of hangars, etc. No. 15487. Sept. 24th.
Hedderwick, H. J. Gun platforms on aircraft. No. 15473. Sept. 24th.
Pullers, Ltd. Bracing structural parts of aircraft. No. 15815. Sept. 28th.
Phillips, E. W. Anti-aircraft height and position finder. No. 15815. Sept. 27th.
Phillips, H. W. Girders, spars, etc. No. 15718. Sept. 23rd.
Pollock, C. Aeronautical machines. No. 15490. Sept. 24th.
Pugh, J. V. Combined wiring-means and strut sockets for aeroplane spars. No. 15641. Sept. 26th.
Sellers, J. C. System of determining distance of aeroplanes from ground at night. No. 15656. Sept. 26th.
Tuckfield, C. Aeronautical engine. No. 15491. Sept. 24th.
Wallace, W. Joint manual and power control for aeroplanes. No. 15726. Sept. 27th.
White and Co., J. S. Aeroplanes. No. 15594. Sept. 25th.
White and Co., J. S. Floats for aeroplanes. No. 15595. Sept. 25th.
White and Co., J. S. Water-tight joints. No. 15596. Sept. 25th.

Complete Specifications Accepted, Prints of which can be Obtained on and after Oct. 17th, 1918.

119,054. July 24th, 1917. Thompson, A. D., and Green, W. N. Gauge or indicator for indicating when a bullet or the like enters a petrol or other tank and safety valve combined.
119,124. Oct. 22nd, 1917. Rothman, R. R. Fluid-driven motors applicable also as propelling devices.
119,127. Oct. 23rd, 1917. Cox, F. J. Sighting apparatus for use in dropping bombs from aircraft.
119,161. Dec. 13th, 1917. Bates, C. Propulsion of aircraft.
119,179. Feb. 4th, 1918. Evans, A. Level-indicating devices for aerial machines, vessels, and apparatus.

Abridgements of recently published Specifications.

FIG 8

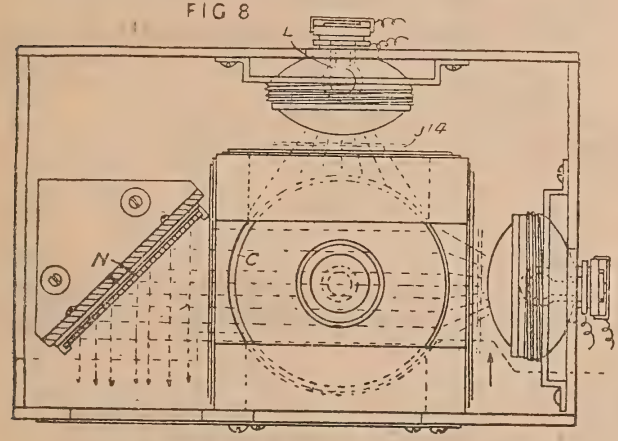


FIG.17

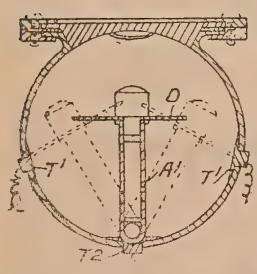
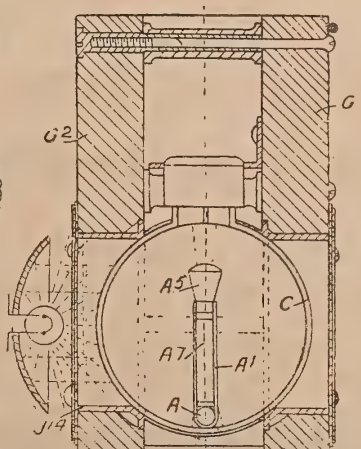


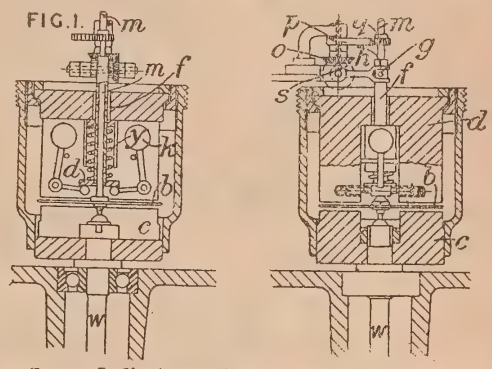
FIG.4



117,161. Clinometers. Gaynor, T. F., 50, High Holborn, London.

A universal clinometer for use with aircraft, submarine, and other ships, railway vehicles, etc., comprises a plummet which keeps a vertical position in a transparent spherical vessel filled with liquid but has no fixed connection with the vessel. The plummet consists of a glass tube A^1, Fig. 4, proviled with a weight A, an air space A^7, and a plug A^5. The plummet is either heavier or lighter than the liquid and rests in contact with the bottom or top of the container. The vessel C has an opening closed by two plugs, between which is an air space to allow for expansion of the liquid, and is gripped elastically in a casing G^1, G^2 formed with observation openings fitted with adjustable indicator cross-bars and a graduated dial. The plummet is illuminated by one or more electric lamps L shining through sheets J^{14} of translucent material or is rendered self-luminous by luminous paint or radio-active material. Fig. 8 shows an arrangement in which the image of the plummet in a mirror N is also seen, so that its inclination in two directions can be observed simultaneously. Fig. 17 shows an horizontal disk D fitted to the plummet to indicate by its apparent shape the inclination to or from the observer. The two sides of the disk may be differently coloured. The edges of the disk and the bottom of the plummet may be arranged to make contact with plugs T^1, T^2 placed in the circuit of an electric signalling or controlling device. An air bubble in the vessel C may act as a level indicator, or a spirit level may be arranged in a lateral extension of the vessel. Any vibration in the structure to which the clinometer is applied assists the plummet in taking up a vertical position when the inclination is altered. In order to obviate the effects of centrifugal force, a weight may be placed at the upper end of the plummet below the plug A^5. A magnetic needle may be attached to the disk D to act as a compass.

FIG.1.



116,689. Speed Indicators. Veigel, A., Feb. 21st, 1918, No. 3137. Convention date, June 2nd, 1917. Not yet accepted. Abridged as open to inspection under Sec. 91 of the Act.

Apparatus adapted to indicate both high and low speeds, particularly applicable for aeroplane engines, comprises the combination of two types of speed indicators, e.g., a centrifugal and an eddy current speed indicator, the first being adapted to indicate high speeds and the second low speeds. A lost-motion device is provided to prevent the centrifugal governor from operating the indicating hand before the desired limit is reached. Two horseshoe magnets *c*, *d*, adjustably secured together by a sleeve and fixed to the driven shaft *w*, have mounted between them on a spring-controlled indicating shaft *m*, an eddy-current disk *b*. Sliding on the shaft *m* is a sleeve *f*, a shoulder *d* on which is forced by a spring *y* on to weighted bell-crank levers *k* pivoted to the upper magnet. Upward movement of the sleeve *f* is communicated through a pin *g* to a fork *n*, and from thence through bevel wheels *s*, *o* to a toothed sector *p* engaging a pinion *q* on the shaft *m*. Sufficient play is provided in the fork to prevent the centrifugal device from coming into operation before the desired limit is reached. In a modification, two pointers may be provided, the higher of which may be covered by a screen until required.

AN AIRCRAFT EXPEDITION.

E. A. Roome and Co., aircraft manufacturers, of Hackney, having decided as a respite from their labours to revive the annual staff outing, which during the war had been in abeyance, arranged a river outing, which took place on Saturday, Sept. 28th, 1918. The party embarked at Richmond and journeyed up the river to Chertsey, where luncheon was served.

The chair was taken by the managing partner, Mr. F. J. Gayer, who expressed a hope that the coming peace might bring renewed prosperity, and a closer co-operation between all employers and employees to assist to that end.

On the return journey tea was taken at Kingston, and during the trip, made so successful by an energetic committee, the piano was kept busily employed.

A TRADE CHANGE.

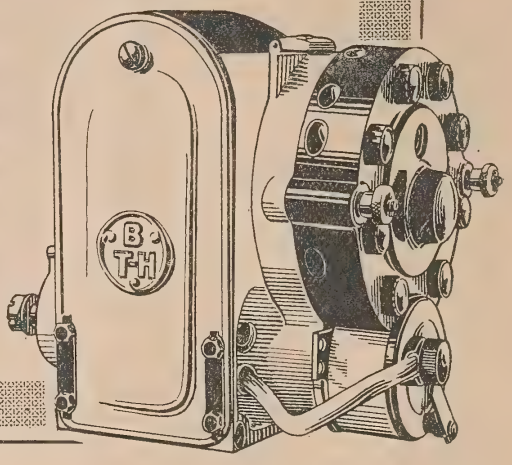
Mr. A. H. Botwright, chairman of the Jackson Aircraft Co., Ltd., desires it to be noted that he has resigned his directorship and all connection with the London Aviation Co., Ltd.

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COMMERCIAL AERONAUTICS

THE NECESSARY DEGREE OF GOVERNMENT INTERFERENCE.

By "Medway."

The brief reports of speeches which appear in the daily papers are notoriously unreliable as guides to what speakers have really said. The reporter gets hold of what he supposes to be the juicy bits, detaches them from their context, and boils them down until they are unrecognisable. It is quite possible that it was by some such process that the remarks made by Lord Montagu at the Handley-Page luncheon to Dominion journalists were made to convey the opinion that, while the Government should provide landing grounds at suitable intervals, everything else should be left to private enterprise.

Whether such an opinion was actually expressed or not, it is certainly held in some quarters. If we admit that we are to some degree dependent for the future upon the action of the Government, the first thing to do is to agree among ourselves as to what we want the Government to do, and—equally important—what we expect it not to do.

If some of us ask the Government to interfere in order to make the establishment of services possible by the provision of subsidies or the exercise of control, while others of us insist that the Government must not shove its fingers into our pie, it is evident that nothing much will be settled either way.

Individual Enterprise.

Now, there is evidently room in this matter for two quite distinct schools of thought. The one starts with the admirable theory that directly the Government begins to interfere individual enterprise is discouraged and progress is immediately retarded. Even if we hold this view—which probably all of us hold in some measure—we apparently have to admit that we cannot get along quite unaided by the Government, which must provide us with landing grounds both of the terminal and of the intermediate types. Now, we cannot stop at this point.

Assuming the Government to be very pliable and obliging, we must not leave it waiting to be told where these landing grounds are wanted. Neither can we give it a free hand to dot landing grounds about all over the world with no other guide than its own fancy as to where they would look nice. Before we can provide landing grounds we must have a very fairly clear idea of what are the services to be instituted. Now, if we are to depend entirely for the operation of services upon private enterprise, we cannot tell in the least how development will go. All we know is that only those services will be started which look like showing a direct and prompt profit.

Supposing that a few people got together and decided to run a service from A to B. We could not expect the Government to fall immediately into line and provide landing grounds at every 10 miles between those points. The result might be that the promoters of the service would find in two or three months that the speculation would not pay. They would then close down, and the national expenditure on the landing grounds would have been wasted unless the Government itself put in a service to fill the gap. The whole problem is a very difficult one, but so far as one can see, what is first wanted is that a small body of genuine experts shall outline a complete scheme of desirable services. There is no reason why the Government should persist in running all of these. In fact, it would probably be far better if an opportunity were given to private enterprise to provide many of the services included in the big scheme. If this were done, however, a certain amount of Government control would have to be exercised.

The French System.

The operation of motor-bus services in Paris affords a fairly good example of the measure of control needed. There a company is given a monopoly to work certain routes. It pays for this monopoly an agreed annual sum to the Department. This would not be advisable at first in our case, since any such payment would reduce profits and discourage enterprise. The Paris Bus Company, however, must also undertake to maintain a proper frequency of service, to keep its vehicles in proper condition, and to offer employment to drivers and others at approved rates. Also it must use vehicles of French manufacture.

Similarly the promoters of an aerial service over one or more of the routes included in the big scheme would have to undertake to maintain a sufficient service with aeroplanes of approved type and of British manufacture, and to pay pilots and others at a proper approved rate. This arrangement would amount in effect to an admission that the promoters of the service were filling a public requirement. It would probably be desirable to limit the rates charged for the carriage of passengers and of goods. If this were done, it would almost certainly be necessary to guarantee the promoters against loss, possibly at the same time limiting their profits.

In many parts of the world services are wanted where, as purely commercial undertakings, they would be absolutely certain to show a dead loss. The return from such services would ultimately come in the form of an increase in the value of the land in the district served. The owner of the land in most of such cases is the Government either of Great Britain, of one of the Dominions, or of some foreign country. It is, then, the Government which stands to gain by the appreciation of its property. Meanwhile, the actual working of the services would show a loss, at any rate at first, because the custom obtainable would be very slight.

In all such cases it is clear that either the Government must run the services itself or else that it must subsidise the people who do so. The subsidy could, in the first instance, be arranged to cover a definite period of years. During that period the promoters of the service would receive an annual payment and would run their service on lines fairly accurately laid down as regards frequency, payment for labour, fares charged, and so on. At the end of the initial period the further working of the services could, so to speak, be put up to Dutch auction. That is to say, the job would go to the people who would do it with the smallest subsidy. After two or three periods, some services might be doing so well that somebody would be found to take them on without a subsidy at all. Finally, in some cases at least, we should reach the position of the Paris omnibus business, in which the man who runs the service is given a monopoly for which he pays.

It is only by some such process as this that services can be got going throughout the Empire in those places which really need them, or will need them, most. I cannot see how we are ever to get going properly unless we tackle the initial job of working out a big scheme. This need not be done by Government officials, but ought to be done rather by the best experts available, whether officials or not. The scheme of this committee should be accepted by the Government without question, and should be periodically reviewed by the committee, strengthened from time to time. In this way the scheme would be steadily enlarged as the powers of the aeroplane increased. Progress in our power of flight would have to be taken for granted from the first.

Offers by Tender.

One imagines, then, a huge map of the world on which are drawn a large number of lines, each representing a service believed to be required. With this map prepared, the Government comes forward and in effect says, "Who would like to take over any of these jobs? What will he pay for the privilege of the monopoly on his own route, or, alternatively, what will he charge for running the service?"

The best bid would be accepted in each case, subject to the necessary investigation as to financial stability and other points. The Government would in each case state a minimum rate of payment for pilots and a maximum scale of charge for carriage. If nobody came forward with an offer to work certain services regarded by the Expert Committee as being key services, then the Government would have to take these on itself. The scheme of landing grounds would follow the lines of the services determined upon.

If anyone undertook a service it would be upon the understanding that terminal and intermediate landing grounds would be provided by the Government. If anyone wanted to run a service not marked upon the map, his application would have to go before the Expert Committee. He would receive no payment for running such a service, but he would have to subscribe to the usual conditions as regards rates and the payment of labour. These conditions would not be a fixed quantity in all parts of the world. Subject to general maxima and minima, they would be assessed in each individual case by the Expert Committee. If the proposal for an uncharted service were accepted, its acceptance would entail upon the Government the necessity for supplying landing grounds at the stipulated intervals.

Thus, so far as I can see, we cannot possibly limit Government interference simply to the provision of landing grounds. There must be a measure of Government control all round, and I have tried to indicate about how far it would have to go. The main reason why the Government cannot be kept out of the business is that the greatest of all uses of the aeroplane will be the

improvement of undeveloped Government property by improving the means of communication to and from it. If the Government merely dotted the world with landing grounds and left private enterprise to do the rest, the result would be a chain, many essential links of which would remain missing for years to come. The links must be forged somehow, and if the private individual will not do it, the Government must. The provision of such links will improve the commercial prospects of other links, originally more attractive and therefore provided.

A Dutch Auction.

This is one of the reasons why I think a periodical Dutch auction system would have to be applied. Supposing there are four places, A, B, C, D, and private enterprise provides a service from A to B and another from C to D, but nobody likes the job of linking up B to C. This is where the Government must either bribe somebody to help or provide the link itself. The provision of this link probably improves the business down between A and B, and also between C and D. Consequently the subsidy for these two services can presently be reduced, and the opportunity for reducing them occurs when the first period is completed and the first Dutch auction takes place.

Going back to the point at which I started, I rather hope that it will prove that either Lord Montagu or Mr. Handley-Page expressed the opinion that I have attributed tentatively to the former, and that, in that case, they will not disdain to deal with the suggestions of one who readily admits inferiority of knowledge as compared with either of them.

THE COMB IN THE AEROPLANE FACTORIES.

A PRACTICAL SUGGESTION FOR THE AIR MINISTRY.

BY H. E. BINSTEAD.

Much has been written regarding young men in munition factories, and latterly the aeroplane factories have come in for their full share of reproach. That there are young men in the factories is not to be denied.

The urgent demand for aeroplanes rendered it imperative that huge staffs should be secured for new factories. The development of the Industry during the past two years must be regarded as one of the most remarkable features of the war. In order that production should be encouraged to the greatest possible extent the employees were given protection against being called up for military service, and employers were thus enabled to obtain an ample supply of labour and to retain it when obtained.

It is obvious that the circumstances were specially favourable for the engagemest of young workers. The disabilities that faced employers in unprotected trades did not affect the aeroplane factories, and the security they afforded from the recruiting authorities made them attractive to workmen of military age.

One does not blame anybody, or allege any lack of patriotism on the part of employers or employed. One is not concerned to do so. Both acted in strict conformity with the laws and regulations, and in these days, when orders are plentiful and special regulations prolific, can more be required of the business man?

The fact remains that there are in the aeroplane factories, particularly in the woodworking shops, large numbers of eligible young men who might well be in the Army, and whose places could be filled by older men quite able to do the necessary work. The question is how can the superfluous, or at least dispensable, young men be made available for military service without dislocating the factories and prejudicing the output of machines required to win the war.

Employers have been appealed to by the military authorities to "comb out" the eligible young men. It must be remembered, however, that the making of aeroplanes is a competitive business, like any other, and a manufacturer is fairly entitled to man his factory with the best material he can procure.

Why should a factory manager, responsible for showing good results both in output and profits, voluntarily handicap his proposition by getting rid of his young workers and replacing them by older, and presumably slower, men? The critics will reply that the appeal is to his patriotism, but this is not a conclusive retort.

Employers of labour are as patriotic as other citizens, but most heads of concerns prefer to keep business and patriotism in separate compartments. One means that an employer who would give £1,000 with pleasure to a patriotic fund would resent being asked to impair the efficiency of his factory though it might not involve him in a loss of £1,000.

The only other method discussed has been, so far, for the National Service Department to apply the comb to the factories and take the young men compulsorily. The reason this plan has not been adopted is the very plain one that the authorities recognise the danger of doing anything likely to prejudice the output of aeroplanes.

They prefer rather to lose the men than risk losing the machines. Therefore they have left the factories alone, except as regards quite young and unskilled employees. But there are many young men in the factories who might be in the Army. How are they to be obtained?

One has said that to appeal to the patriotism of the employer is not the right solution. Such appeals penalise the patriotic and enable the unpatriotic to profit. Clearly the manufacturer who combed out all the active young men he could would compete at a disadvantage with his rival who ignored the appeal.

It is undesirable that this should happen. It is the patriotic employer who should enjoy the reward, the unpatriotic being penalised.

The voluntary application of the comb by employers works unfairly and unequally; compulsion the authorities do not see their way to adopt. There remains a third method, which one will briefly expound.

It is simply this. Let the Ministry of Munitions fix a "standard age" for workers in the aeroplane factories, the age naturally differing according to the nature of the work.

When the manufacturer has completed a contract and rendered his account, he should be called upon to present a return giving the age of all male employees. The average would then be compared with the standard age in all the various processes. For each year the average was above the standard age, the manufacturer would be given a bonus in the form of the addition of an agreed percentage to his contract price.

The plan might be extended in the direction of fining a manufacturer whose average age fell below the standard age. To the proposal to reward the firm whose workers were above the standard age no exception could be taken, and it would be perfectly fair to do so.

The bonus would not be all profit for the firm. To earn it young labour would have to be dispensed with, and the bonus would not really amount to more than compensation for a disability accepted to help the National Service Department.

Thus the manufacturer who combed out his young men and assisted the Army to get the men required would not be penalised as a result of this patriotism. The employer who held on to his young men would not profit at the expense of his more public-spirited competitor.

What is there to be said against this simple plan? It is difficult to see objections. Then why is it not adopted? That also is hard to determine.

It is not because the competent authorities have not thought of the idea, because it has been submitted to the National Service Department for their approval. Their reply is that it is wholly a matter for the Ministry of Munitions.

That is obvious, but what hope has a private individual of persuading the Ministry of Munitions to consider it? None whatever. The spending departments are not particularly concerned to get young men out of the factories and into the Army. It is not their job. It is the job of the National Service Department.

To the business man the proper course to adopt would seem to be for the department over which Sir Auckland Geddes presides, to submit the scheme to the Air Ministry asking them to give it their sympathetic consideration. To turn the idea down on the plea that the giving of a bonus to contractors is a matter for another department savours of the official way of disposing of a practical scheme to which no other objection can be taken.

Whose business is it to try and get the dispensable young men out of the factories? That is the sole aim of this scheme, and it is for the National Service Department, and no other, to decide whether or not it is worth trying.

If they decide that it is not, on its merits, let them say so and give their reasons. If, on the other hand, they approve the notion, subject to it being proved workable, it is eminently their duty to try and get it adopted by the appropriate Government departments. One would go still further and say that the Air Ministry could hardly adopt the suggestion without first referring it to the National Service Department and ascertaining their views upon it. Meanwhile, time passes and the young men remain in the factories.

It would be highly interesting to hear the opinion of aeroplane manufacturers regarding this scheme. The object of it is to secure the goodwill of the manufacturers in a comb-out of the factories and to get the employers to apply the comb in their own factories.

It is a little surprising that the National Service Department should hesitate to invite aeroplane manufacturers to comment upon the suggestion. Failing official action, The Aeroplane steps into the breach and gives publicity to the proposal with a view to enabling it to be discussed in trade circles.

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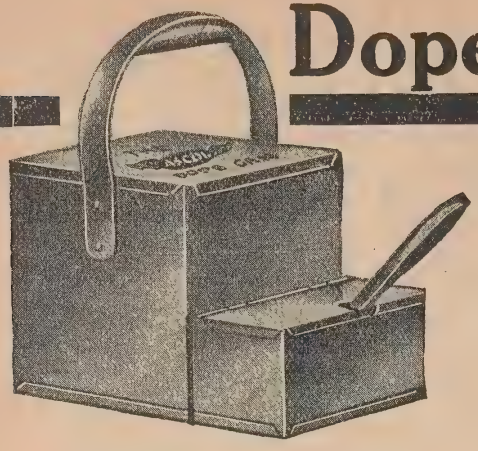
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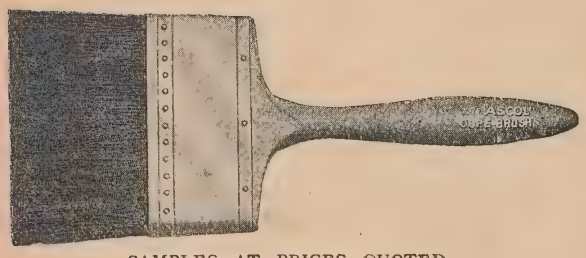
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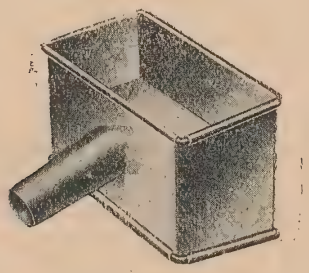
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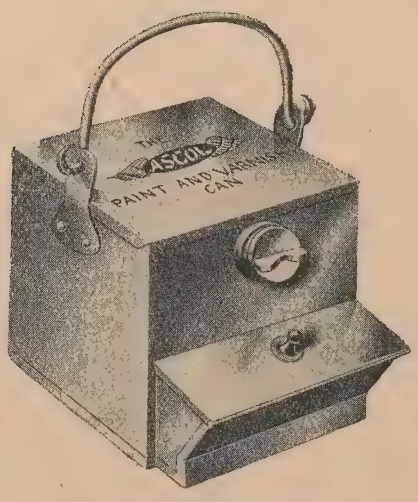


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AIRCRAFT FINANCE

CURRENT TOPICS.

"Dope."

With admirable pertinacity one small section of the daily Press is constantly freshening up the public knowledge with lively and appropriate details of the "Dope" affair. This should provide an excellent opportunity for some broad-minded Member of Parliament to seek official information calculated to be serviceable to the nation.

Inappropriate Coincidences.

The associations of some public men with the British Cellulose and Chemical Manufacturing Co. appear to be inappropriate coincidences. Sir Lionel Phillips until recently was a director of the Mineral Resources Development Committee of the Ministry of Munitions, working in conjunction with the Petroleum Executive. Being one of the magnates associated with the financing and development of the Transvaal gold-mining industry, he is a man of much substance and with interests spread far and wide. He is said to have been a holder of the sixpenny shares in the original British Cellulose Syndicate.

More of Them.

Professor Sir John Cadman is a director of the Petroleum Executive and held a lot of the sixpenny shares, as also did Col. H. H. Mulliner, who is officially connected with the Petroleum Executive. Mr. C. J. Small was a holder of these sixpenny shares and is connected with the Petroleum Syndicate. Then, again, the Colonial Secretary's son, Major Eric Long, possessed some of these original shares, and was appointed joint site superintendent of the company's new works at Spondon. Coincidences like these are interesting, and the Man in the Street will no doubt want to know how they originated and developed and why. It is only fair that we should know, in justice to the individuals concerned.

Vickers Profits.

Vickers report and accounts concerning the operations of 1915 are not very illuminating because they are musty. The profit disclosed for that year is £1,099,700, after allowing for excess profit tax, compared with £1,019,000. Such figures do not provide great scope for enthusiasm. Having regard to the exceptionally fortunate position of the undertaking in relation to war work and to the knowledge that the Government utilised this position to its utmost ability, one was justified in looking for a substantially greater increase in profits.

Prudence.

But it is often said that figures can be made to show anything and prove nothing. No doubt it was considered prudent to put a lot of profit back into the business in connection with extensions and improvements, and by this means be prepared for contingencies. This is what has happened, and probably the accounts for the years 1916 and 1917, when published, will disclose rigidly adjusted profits. At the same time bigger profits are somewhere.

Peace Programmes Prepared.

The fact that the company has been developing its plans for the future confirms this. Thus shareholders are told in the report accompanying the accounts for 1915 that "the directors have a peace programme under the most careful consideration and have made extensive preparations. It is clear, however, that much expenditure will have to be incurred in the replacement of machines suitable for war purposes only and in carrying the higher proportions of stocks and work in progress that peace trades require. The extensive connections that have been formed both by the parent company and by the subsidiary companies will be of the greatest use in increasing the company's old peace trades and in disposing of their new products." This sounds hopeful.

Capitalising the Reserves.

Satisfaction is felt with the present offer of new shares on the bonus terms of 30s. each, and more serious attention is paid to the articles of association so as to permit of the reserve funds being capitalised, which should mean another bonus at some future date. The idea is growing, too, that in course of time Armstrong, Whitworths must capitalise some of their reserves. This implies that the market has recovered from the disappointment caused by the issue of preference shares. It is rightly argued that what Vickers can do, Armstrong, Whitworths are equally capable of doing. The eventuality is only a question of time.

New Issue of Armstrong-Whitworth.

The prospectus of the new issue of 1,000,000 £1 Non-Cumulative 6½ per cent. Third Preference shares of Armstrong, Whitworth and Co. is now published. The price is par and preference in allotment is to be given to existing shareholders. These constitute an attractive investment to those who fancy an industrial security of a sound type, and are content with 6½ per cent. interest on their money.

Cheerful Stock Exchange.

The jubilation of the Stock Exchange over the war news from the various fronts is only natural, and happily is not developing into a riot of unreasonable excitement. True enough, the values of some securities, like Consols, seem to have been forced up without any due regard to actual economic merit, but, generally, restraint is being shown. Peace will prove a blessing, but in many cases the readjustment of the value of many securities from war conditions to peace conditions is an intricate problem.

Aircraft Shares Fall.

Aircraft and armament shares have been sold on the good military news, and to listen to the arguments put forward in justification of the set-back one would imagine that peace conditions must spell very modest profits or even bankruptcy for all of these undertakings. This is so sweeping an assertion that it is obviously ridiculous. Admittedly profits will sink to a lower scale, but those concerns which have been soundly managed with a view not merely to present profits, but to an adaptability for peace business, should be able to give a good account of themselves even under trying conditions.

French Items.

The French Atlas Company is a war creation specialising in the aircraft and motor industry, and has formed several subsidiaries, including the Atlas-Aviation-Lyon Co., with a capital of 7,500,000 francs; the Atlas Transports Co., whose capital has been increased from 500,000 francs to 2,000,000 francs; and others, including one in progress of formation for dealing with agricultural tractors, etc. It has been pursuing a vigorous development programme, and the capital is shortly to be increased from five to ten million francs, this being the first step in the recent decision to bring the capitalisation ultimately up to 25,000,000 francs.

In order to cope with the development of its aircraft business the French Bellanger Motor Co. proposes to increase its capital from 1,500,000 francs to 5,000,000 francs by the creation of 35,000 additional shares of 100 francs each. It is stated that the capital at present is inadequate for the business in hand and contemplated extensions.

American Taxes.

Under the $8,000,000,000 War Revenue Bill voted by the United States there is a flat tax of 80 per cent. on war profits, with alternative taxes ranging from 35 per cent. to 70 per cent. on Excess Profits. The maximum super-tax on incomes is raised to 65 per cent. The normal tax on incomes above $4,000 is fixed at 12 per cent., and on incomes below $4,000 and above the exemption limit at 6 per cent.

Curtiss Aero Figures.

By the way, the Willys-Overland Co. acquired control of the Curtiss Aeroplane and Motor Company for a period of three and a-half years. This happened last year. At December 31st last the Curtiss Co. report showed sales at $19,826,773. The net profits figured at $3,321,356; income credits at $152,506; interest $334,627; and taxes amounted to $729,738, and the 7 per cent. dividend $420,000.

Willys-Overland Business.

In May the Willys-Overland had in hand, amongst a multitude of other business, orders for 1,000 aero-motors, and for 5,000 8-cylinder Curtiss engines. American companies are allowed to publish information of this kind, and it would be instructive if one could collect the aero business at present in hand in the States.

Record of Output.

Of course, the Willys-Overland is essentially a motor construction concern which, like the kindred British undertakings, has adapted its plant to the needs of the war. Its output of cars in 1907-8 was 323; in 1912, 21,000; in 1913, 37,000; in 1914, 48,000; in 1915, 95,000; in 1916, 142,441; and in 1917, 140,002. At the request of the United States Government its car output is being reduced to the advantage of the production of more essential war work.

Albion Motor Policy.

Owing to the unavoidable delay in adjusting the accounts for 1917, the Albion Motor Co. has not yet found it possible to prepare a balance sheet. However, it has been decided to pay a further interim dividend of 5 per cent. Incidentally it is

remarked that in view of the probable increase of working capital required to meet after war conditions the directors do not expect to be able to recommend any further distribution of profits for the past year.

After the War.

This policy of preparing for after the war has a lot to recommend it. It is much too common a practice nowadays to consider the present and let the future take care of itself, whereas in view of the glorious uncertainties of conditions when peace is restored it would appear to be sounder to prepare for the future and the struggles it promises.

Analysis of B.S.A. Scheme.

As a consequence of the proposal to capitalise the reserve fund and thus give a bonus of one new share for every share held, Birmingham Small Arms Ordinary have commanded 84s. apiece. Therefore, the value of the shares when the scheme is completed will be 42s. each. To justify such a price the dividend should be at least 15 per cent. on the enlarged capital or equal to a return of 7 per cent. free of income-tax. The dividend has been 20 per cent., free of tax, on the present capitalisation.

Dividends on the Enlarged Capital.

The general idea is that the company should be able to pay this 15 per cent. To do so would involve approximately £120,000 more than the amount necessary to pay 20 per cent. on the present capital, without taking into consideration the question of income-tax which is now paid by the company. Undoubtedly the concern is prospering greatly, partly because of the war, though it has a sound and profitable business apart from purely military machines, and it is believed that elaborate and extensive preparations have been made for post-war conditions.

Record of Profits.

This is all very well, but one cannot lose sight of the fact that post-war profits are to be earned on the substantially bigger capitalisation. For 1914 the available profit was £170,745: they expanded to £383,231 in 1915, to £359,010 in 1916, and £406,858 in 1917, of which the 20 per cent. tax dividend on the Ordinary shares absorbed £230,095, and £156,000 was added to reserve, leaving a surplus of £170,306 to be carried forward.

NEW COMPANIES.

Falcon Aircraft Co., Ltd.—Private company. Registered Sept. 27th. Capital £10,000 in £1 shares. To acquire an option to purchase the engineering business of the F. S. Engineering Co. carried on at 28, Kelvin Road, Highbury, to carry on business as engineers, manufacturers of aeroplanes, aircraft and parts thereof, etc. The subscribers (each with one share) are:—Elsie M. Richards, 176, Eastcombe Avenue, Charlton, S.E., clerk; Hylda Douthitt, 65b, High Street, Fulham, S.W., clerk. The first directors are:—R. T. Wallace, J. W. Jackson, C. Knott, C. L. Neil, H. Cotes, J. S. Rees, and J. Charchoets. Secretary: C. Knott.

Thacker, Bell and Co., Ltd.—Private company. Registered Sept. 26th. Capital £1,000 in £1 shares to take over the business carried on as the "Aircraft Construction Co." at 44, and 46, Leadenhall Street, E.C., and at Harley Works, Beckton Road, Plaistow, and to carry on the business of mechanical, electrical, aeronautical, and general engineers, millwrights, toolmakers, brass founders, metal workers, etc. Agreement with E. H. Bell. The subscribers (each with one share) are:—E. K. Bell, Harley Works, Beckton Road, E.16, engineer; R. S. Thacker, 69, Norbury Crescent, Norbury, Surrey, barrister. The first directors: E. H. Bell and R. S. Thacker. Registered office: 44-46, Leadenhall Street, E.C.

SATISFACTIONS, MORTGAGES, AND CHARGES.

L.B. Automatic Devices, Ltd.—Debenture dated Sept. 5th, 1918, charged on the company's undertaking and property, present and future, including uncalled capital, securing £500. Holder: B. Baines, 17, Green Street, W.C.2.

CARBIDE SUPPLIES.

A matter of national as well as individual importance in connection with the production of munitions of war is the question of transporting many thousands of workpeople to and from their homes, often at a distance. A large number of men and women use the bicycle or motor cycle, and further, many have to make night journeys.

This point having been raised with the Controller of Non-Ferrous Materials, and the difficulties of obtaining carbide under the present system explained, the County Chemical Co., Ltd., wish it to be known that it has been decided to grant releases of carbide to large firms for purposes of distribution *by them* to their cycle and motor cycle-using employees. Under this arrangement, which does not attempt to ensure supplies through the ordinary retail channels, requisitions for bulk supplies from aircraft works, shipyards, munition works, collieries, etc., willing to undertake the distribution will receive consideration.

Such applications should be made on form AM2/HB requisitioning one month's supplies for this purpose, which may be obtained of the County Chemical Co., Ltd., Birmingham, or other recognised distributors.

ITALIAN COMMERCIAL PROGRESS.

Unusually large increasings of capital by firms having a foot or both feet in the aero trade here has been the feature of the summer.

After the opening of the season and setting of the fashion by the F.I.A.T. and Ansaldo concerns, it seems to have been almost de rigueur to follow their lead. Among the more noticeable firms who have raised further capital, or are about to do so, are the I.A.M. of Naples, builders of F.B.A. types and other craft; the Isotta Fraschini of Milan, motors, bombing-planes and submarine chaser boats; not to mention Pirelli and Co., who are doing so much work for the aero businesses, both of the heavier and lighter-than-air kind.

Another well-known firm of international activities now turning out aero-engines and other war products is the Italia, while the Scat is providing the Allies with engines and other helps for hurting the Hun.

The Feroldi carburettor is now, the inventor tells me, to be fitted to the F.I.A.T. engines on the C.A. triplanes.—T. S. Harvey.

DAMP AMUSEMENTS.

The second annual swimming gala of the employees and staff of the Grahame-White Company, held at the Hampstead Baths on Saturday, Sept. 28th, attracted an exceptionally large audience, and was declared by all to be a complete success. Among those who attended were the Hon. Mrs. Henley (who presented a handsome cup), Lord Muir Mackenzie, and Mr. and Mrs. Grahame-White (who were also donors of prizes).

The results were as follows:—

Women's 60 Yards Club Championship (first prize presented by Mrs. Grahame-White).—1st, Miss M. Short; 2nd, Miss G. Thomas.

Men's 60 Yards Club Handicap.—1st, F. Edge; 2nd, J. James; 3rd, F. Topham.

Women's 50 Yards Club Handicap.—1st, Miss M. Rosewell; 2nd, Miss A. Linnell; 3rd, Miss M. Short.

Men's 440 Yards Scratch Race (challenge cup presented by Mr. Grahame-White).—1st, H. Stewart, cup-holder (8 min. 35 secs.); 2nd, F. Topham.

Women's and Men's Cigarette Race.—1st, Miss E. Voysey and W. Kirby; 2nd, Miss G. French and W. Standing.

Open Fancy Diving Competition (challenge cup presented by the Hon. Mrs. Henley).—1st, A. Crutchley; 2nd, Miss E. Voysey.

Long-distance Under-water Swim.—1st, Brock (60 yards); 2nd, R. Cook (50 yards); 3rd, R. Wholley (40 yards).

Life-Saving Competition (challenge cup presented by Mrs. Winston Churchill).—1st, F. Topham; 2nd, H. Stewart; 3rd, J. James.

Club Learners' Race.—1st, J. Keen; 2nd, Miss N. Sims.

Men's Obstacle Race.—1st, F. Topham; 2nd, G. Chambers; 3rd, H. Davis.

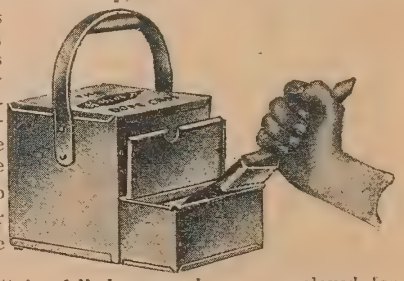
Walking the Pole (fancy dress).—1st, W. Davis; 2nd, W. Kirby.

The prizes will be presented to the successful competitors by Mrs. Grahame-White at a concert which will be held in the large mess-room of the company at 8.15 p.m. on Oct. 18th.

THE "ASCOL" DOPE-CAN.

The accompanying illustration shows the "Ascol" dope-can, which, it is claimed, was actually the first registered design on the chicken-feed principle, being registered by the firm on March 6th, 1918, under number 663563, and, although lately improved after further consideration, the principle remains the same.

It is claimed for the improved "Ascol" dope-can that the strictest economy in dope is effected, that the can is easily filled, handled, and cleaned when necessary, and that while it is practically airtight, it holds sufficient dope for a shift, thus avoiding, as much as possible, any loss through evaporation during the night or at any time when the can is not in use. The cans can be supplied to customers numbered for use daily by the same operator.



The original type of "Ascol" dope-can is now employed for use exclusively with coloured paints, and the makers have arranged to supply these already painted with a red, white, blue, or any other coloured band, to indicate the colour for which they are to be regularly used.

In addition to dope-cans and paint pots the makers are also supplying to the Industry special fillers for the dope-cans, again to avoid any wastage of dope in filling, and, further, they are still supplying large quantities of dope brushes, thus completing the equipment of accessories for the dope room.

Large stocks of both the improved "Ascol" dope-can and "Ascol" paint pot are constantly passing through the warehouse, and a free descriptive leaflet on "Ascol" Equipment for the dope room can be obtained on application to "Ascol" House, 125, Long Acre, London, W.C.2.

(*Continued from page 1286A.*)

Capt. Rene Maurice Barley (Sea Patrol).
Lt. Leslie Wallis Beal (Pilot, temp. Sea Patrol duty, 36th Squadron).
Maj. the Hon. Roger Coke (Airship Service).
Lt. Grahame Heath (Sea Patrol).
Lt. (Hon. Capt.) John Frederick Horsey (Sea Patrol).
Lt. Gordon Frank Ryans, D.F.C. (Sea Patrol).
Pilot-Ensign P. J. Ives, U.S.A. (Aviation Service).
Capt. Geoffrey Littleton Lowis (Aviation Service).
Pilot-Ensign J. F. McNamara, U.S.A. Aviation Service (Sea Patrol).
Lt. Jaffray John Walter Nicholson (Sea Patrol).
Lt. Frederick William Pickup (Sea Patrol)
Lt. John Nettleton Raby (Obsr.), temp. Sea Patrol duty (36th Squadron).
Lt. Albert Cyril Sharwood (Sea Patrol).
Capt. Charles Thomas Tyrer (Sea Patrol).
Sec. Lt. Thomas Willis (Sea Patrol).
208368 1st Cl. Clerk A. H. Ashton (Basingstoke); 204286 Serjt. Mech. R. H. (C.) F. B. Clark (Folkestone); 219078 Serjt. (G.) J. A. Hesden (New Cross, S.E.); 5485 Flt. Serjt. C. W. Janes (Tonbridge); 6312 Serjt. H. A. Longman (Wark-on-Tyne); 201149 Chief Mech. (E.) L. G. Miles (Harlesden); 208042 Serjt. Mech. (E.) R. H. Powell (Brixton, S.W.); 208284 Air Mech. 1st Cl. (A.) E. A. Stally (Hastings).

AWARDS OF FOREIGN DECORATIONS.

DECORATIONS CONFERRED BY THE GOVERNMENT OF THE FRENCH REPUBLIC.

Awarded the Croix d'Officier of the Legion of Honour.

Lt. Col. (temp. Brig.-Gen.) Tom Ince Webb-Bowen, C.M.G. (Bedford Regt.).

Awarded the Croix d'Officier of the Legion of Honour and Croix de Guerre.

Lt.-Col. George William Patrick Dawes, D.S.O. (Roy. Berks Regt.).

Awarded the Croix de Chevalier of the Legion of Honour and Croix de Guerre.

Lt. (temp. Capt.) Gerald Ernest Gibbs, M.C.

Awarded the Croix de Chevalier of the Legion of Honour.

Capt. (temp. Maj.) Gilbert Ware Murlis Green, D.S.O., M.C.
Capt. (temp. Maj.) Edwin Rowland Moon, D.S.O.

Awarded the Croix de Guerre.

Sec. Lt. Alian Finlay Alexander.
Lt. William George Barker, D.S.O., M.C.
Lt. Thomas Henry Barry (R.G.A.).
Capt. (temp. Maj.) Charles Edgar Bryant, D.S.O. (7th Hussars).
Capt. Frederic Carr.
Lt. Charles Keay Coffey. (Killed May 27th, 1918.)
Lt. (temp. Capt.) Stanley Beresford Collett (Durham L.I.)
Capt. (temp. Maj.) John Ogilvie Davis, M.C.
Lt. Arthur Nooght Dufton.
Lt. Acheson Gosford Goulding, M.C.
Capt. Augustus Francis Woodward Gregory.
Lt. Reuben George Hammersley
Sec. Lt. Earl McNabb Hand.
Lt. Charles Phillip Harrison, M.C. (R.E.).
Lt. (temp. Capt.) Richard Harrison.
Lt. Bertram Head, M.C. (Northd. Fus.).
Maj. George Henderson (Indian Army).
Lt. (temp. Capt.) James Duff Hewett.
Lt. Harold Woolf Higham (Notts. and Derby).
Lt. Hugh Pughe Lloyd, M.C.
Capt. Frederick William Lowen.
Capt. (temp. Maj.) William Robert Brown McBain, M.C
Sec. Lt. Anthony Nugent.
Lt. Charles Dudley Palmer (A. and S. Highrs.)
Capt. Samuel Richard Penrose-Welstead, D.F.C
Lt. (temp. Capt.) Geoffrey Arthur Henzell Pidcock.
Lt. (temp. Capt.) Edmond Robert Harris Pollak, M.C. (R.A.)
Lt. George Augustus Bellair Ross (Lpool Regt.)
Lt. (temp. Capt.) Edward Telford de Lauret Simpson.
Capt. Richard Percyvale Ward, M.C. (R. Welsh Fus.).
Lt. Frederick Williams.
Sec. Lt. Percy Wilson.
240289 Serjt. Mech. (Obsr.) Francis Leonard Roberts (Finsbury Sq.).

DECORATION CONFERRED BY THE GOVERNMENT OF ITALY.

Military Order of Savoy—Officer.

Lt.-Col. (temp. Brig.-Gen.) Tom Ince Webb-Bowen, C.M.G.

DECORATIONS CONFERRED BY THE GOVERNMENT OF BELGIUM.

Croix de Guerre (Belgian).

Col. (temp. Brig.-Gen.) Charles Laverock Lamb, C.M.G., D.S.O.

Chevalier de l'Ordre de la Couronne.

Lt. John Cunningham Mitchell.

DECORATIONS AWARDED BY THE HELLENIC GOVERNMENT.

Silver War Medal.

Lt. (Hon. Capt.) Charles Gilmour, D.S.C.
Lt. (Hon. Capt.) Harold Thomas Mellings D.S.C., D.F.C.

Cross of Commander of the Order of the Redeemer.

Lt.-Col. George William Patrick Dawes, D.S.O. (R. Berks. Regt.).

His Majesty the King has granted unrestricted permission for the wearing of the above-mentioned decorations.

WAR OFFICE, Oct. 1st.

His Majesty the King has been graciously pleased to approve of the award of the Distinguished Conduct Medal to the undermentioned Non-commissioned Officer for gallantry and distinguished service in the Field :—

67051 Cpl. (Actg. Serjt.) E. A. Deighton, R.A.F. (Cheltenham).

For conspicuous gallantry and devotion to duty. In little more than a fortnight he has shot down five enemy aircraft. He has shown remarkable marksmanship and coolness in action, and is a valuable asset in his squadron.

AIR MINISTRY, Oct. 1st.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Deputy Director.—Lt.-Col. (temp. Col.) R. J. Armes, and to retain his temp. rank whilst so empld., Aug. 22nd.

Staff Officer, 1st Cl.—Col. R. W. Glennie, C.M.G., Aug. 15th.

The following temp. appts. are made :—Staff Officer, 1st Cl.—Lt.-Col. F. H. Cleaver, D.S.O., June 18th.

Staff Officer, 2nd Cl.—(P.) J. S. Ruttle (Lt., actg. Capt., attd. E. Kent R.) is granted a temp. commn. as Lt., and to be temp. Maj. whilst so empld., July 6th.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld. if not already holding that rank :—(P.) Capt. P. P. C. Penberthy, July 15th; Sec. Lt. (temp. Capt.) F. Waldron, June 14th to July 15th; (Q.) Lt. G. S. Steel, June 24th.

Staff Officer, 4th Cl. (1st Gr.).—Sec. Lt. B. Rooke-Cowell, and to be temp. Capt. whilst so empld., Sept. 9th.

FLYING BRANCH.—Capt. J. G. Struthers, D.S.C., to be temp. Maj. whilst empld. as Maj. (Dir.), Sept. 19th; Lt. G. F. Knight, to be temp. Capt. whilst empld. as Capt. (A.), Aug. 1st, with seny. from Aug. 1st, 1917, (substituted for notification in the "Gazette," Aug. 16th)

Lts. to be temp. Capts. whils empld. as Capts. (A.) :—L. D. Brown, E. F. Haylock, Aug. 1st; J. V. Turner, Aug. 9th; R. D. Best, P. H. Davy, S. D. Withers, Sept. 1st; J. E. H. Dakin, P. M. McSwiny, Sept. 16th; N. B. Scott, M. G. W. Stewart, G. J. Strange, Sept. 17th; F. T. Woods, Sept. 19th; G. J. Farmer, Sept. 22nd; Lts. (O.) to be Lts. (A.) :—H. Entwistle, Aug. 24th; E. G. Williams, Sept. 12th, (Hon. Capt.) L. Laing, and to be Hon. Capt., Sept. 13th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts. (A.) :—H. J. Boyle, May 1st; E. G. Corey, July 7th; A. D. Patton, July 8th; G. P. McCraig, July 11th; A. W. Johnston, July 13th; W. Shackleton, Sept. 6th; G. Dignam, Sept. 9th; J. E. Gordon, W. S. Brooks, E. G. Simpson, Sept. 10th; A. Champ, H. G. Daulton, A. A. Swait, L. V. West, F. F. J. Wise, E. H. Smy, P. G. Greenwood, L. C. Taylor, Sept. 11th; H. N. Tiplady, Sept. 12th; G. C. Gage, H. Walmsley (date of first commn., March 9th), K. H. Paine, J. W. Wilson, G. A. Thompson (date of first commn., March 23rd), R. T. Thacker, G. M. Gossage, E. J. Bannister, Sept. 13th; J. M. Porteous, Sept 14th, R. E. Baty, M.C. (temp. Lt., Northd. Fus.), is granted a temp. commn. as Sec. Lt. (A.), and to be Hon. Lt., May 2nd (substituted for notification in "Gazette," May 31st, p. 6385).

The following are granted temp. commns. as Sec. Lts (A.) :—S. J. E. Callcott (temp. Sec. Lt., attd. Yorks L.I.); R. K. Wilson (Sec. Lt., Northd. Fus., T.F.), Aug. 31st; D. M. Nichols (late R.N.A.S.), Sept. 7th; H. A. L. Pattison (temp. Lt., Bedf. R.) and to be Hon. Lt., Sept. 10th; G. H. L. Easterbrook (Lt., Devon R., T.F., and to be Hon. Lt.; R. L. Hall (Lt., A.S.C., T.F.), and to be Hon. Lt.; H. J. Bristoll (Sec. Lt., Lanc. Fus., T.F.), Sept. 11th; G. W. Duggan (Lt., Fort Garry Horse, C.E.F.), and to be Hon. Lt.; J. I. E. S. Wright (Sec. Lt., Lond. R., T.F.), Sept. 12th; W. S. Ross (Lt., Sco. Rif., T.F.), and to be Hon. Lt.; J. Cave (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., Sept. 13th; C. T. Wakeford (Lt., S.A. Forces), and to be Hon. Lt.; N. E. Latham, H. Mitchell, Sept. 30th.

Prob. Flt. Officers (late R.N.A.S.), granted temp. commns. as Sec. Lts. (A.) :—G. W. Cochrane, May 7th; H. D. Lackey, June 14th, V. E. Jackson, June 15th; P. Girvin, Sept. 11th; R. G. Alderson, Sept. 12th.

Flt. Cadets granted temp. commns. as Sec. Lts. (A.) :—E. L. Howells, Aug. 7th; J. F. Starkey, W. R. Stewart, Sept. 16th; W. H. Perks, E. T. Brownscombe, H. O. Williams, C. L. Gall, W. J. Sanderson, Sept. 17th; S. C. Black, J. W. Brown, Sept. 18th; P. H. Jenner, A. K. Doull, Sept. 20th.

Cadets granted temp. commns. as Sec. Lts. (A.) :—F. I. Banghart, R. Barrett, J. C. Bell, W. M. Bergey, M. Bonser, G. E. Bradley, C. G. Brennand, A. Brown, J. H. Cairns, H. F. Conroy, H. E. Davis, A. H. Dubois, S. E. Edwards, R. H. Ellis, P. Evans, J. D. Fitzsimmons, H. E. Foster, W. H. Grant, H. S. Haggerty, M. E. Hall, P. E. Hart, R. L. Hayden, H. H. Hewetson, I. W. Hoehler, E. J. Kiely, F. L. Kirby, G. Le F. Lalende, W. F. Langford, A. Le Gault, G. Lewis, H. C. G. Ligertwood, H. S. Littlejohn, R. G. Lockwood, C. W. Loucks, W. B. Mavity, A. J. McGoldrick, M. H. McRae, D. A. Morrow, V. P. Murphy, C. A. Muir, B. A. Noble, T. B. Patterson, A. A. Rolph, E. Z. Sexton, F. P. Shanahan, B. Solomon, H. T. W. Sutherland, H. Tornquist, J. W. Weir, H. L. Turner, W. E. White, J. F. Wilcox, Sept. 5th.

Flt. Cadets granted temp. commns. as Sec. Lts (A. and S.) :—J. H. Chambers, May 1st; J. D. Allen, E. C. Archer, F. T. Chouler, F. St. L. Devenish, G. R. Duthie, R. R. G. Duthie, J. C. Elsworth, E. D. Fenn, D. L. Nicholas, J. S. Shannon, E. E. Smith, C. J. S. Taunton, H. H. Thesen, R. J. Tilney, G. Vaughan, L. M. Williams, July 20th; W. G. Harris, Aug. 30th; G. H. Weir, Sept. 6th; K. L. Graham, Sept. 17th; J. C. Kyle, Sept. 18th; Lt. C. A. McConchie to be Sec. Lt. (Dir.) and to be Hon. Lt., from (Obsvr. Officer), Sept. 5th; Sec. Lt. T. O. Oakes to be Sec. Lt. (Dir.) from (T.), Sept. 5th

Prob. Flt. Officer P. H. D. Blackman (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (Dir.), Sept. 9th. The following are granted temp. commns. as Sec. Lts. (Dir.) :—W. Phillip (Sec. Lt., Lpool. R., T.F.), F. C. Rayson (temp. Sec. Lt., attd. R. Fus.), C. A. Roxburgh (temp. Sec. Lt., attd. Glouc. R.), F. W. Turner (temp. Sec. Lt., attd. Rif. Brig.), H. S. Manterfield (temp. Sec. Lt., attd. Oxf. and Bucks L.I.), W. P. Watts (temp. Sec. Lt., attd. Duke of Corn. L.I.), J. E. Warner (temp. Sec. Lt., attd. Nort. R.), E. Purton (Sec. Lt., Lond. R., T.F.), G. W. W. Walpole (temp. Sec. Lt., attd. Northd. Fus.), June 24th; W. G. Olding (temp. Sec. Lt., attd. Duke of Corn. L.I.), July 31st.

Flt. Cadets granted temp. commns. as Sec. Lts. (Dir.) :—T. B. Shepherd, C. E. Moore, B. O. Bracey, J. H. Wharmby, H. N. Nicholls, H. F. B. Duval-Symington, S. A. Gluning, H. Cameron, F. Wight, H. W. Jeffreys, H. R. Young, H. T. Jackman, J. O. Huddart, S. P. Powell, R. S. Simpson, F. C. Goddard, W. Barnes, W. Bellingham, H. Firstbrook, H. Fox, G. Westcott, July 17th; E. T. Adams, Aug. 1st; J. Sproston, Aug. 23rd; R. H. Berryman, C. B. Creasey, E. Ireland, J. W. Cruickshank, J. E. C. Hornsby, D. F. Barber, Aug. 28th; A. R. Purchase, B. H. Filkins, T. Lamb, F. W. Davis, G. W. Booth, Sept. 4th.

The following are granted temp. commns. as Sec. Lts. (K.B.) :—L. C. Pierce (Lt., R.F.A., T.F.), and to be Hon. Lt., G. Holland (Sec. Lt., R.F.A., Spec. Res.), Aug. 24th; H. A. Ball, M.M. (Sec. Lt., R.F.A.), W. H. Shrimpton (Sec. Lt., R.F.A., Spec. Res.), Sept. 8th; Sec. Lt. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts (Obsvr. Officers) :—G. W. H. Parlee, July 14th; J. Millar, Aug. 16th; B. Garrett, T. A. Evans, A. H. McIntyre, Sept. 21st; R. D. C. Vincent, Sept. 22nd.

The following are granted temp. commns. as Sec. Lts (Obsvr. Officers) :—F. C. Dixon (Lt. Manch. R., T.F.), and to be Hon. Lt., April 1st; F. H. Webb (temp. Lt., R. War. R.), and to be Hon. Lt., May 18th; J. J. Fenwick (temp. Lt., attd. R. Scots), and to be Hon. Lt., June 8th (substituted for notification in "Gazette," of June 14th), A. G. MacGowan (temp. Lt., Gen. List, New Armies), and to be Hon. Lt., July 6th (substituted for notification in "Gazette" of Aug. 20th, page 9705); W. W. E. Clarke temp. Lt., attd. Lanc. Fus.), and to be Hon. Lt., July 17th; (substituted for notification in the "Gazette" of Aug. 23rd, page 9831); E. L. Chafe (temp. Sec. Lt., Rif. Brig.), R. H. St. Amory (temp. Sec. Lt., A.S.C.), J. W. Firth (temp. Lt., Durh. L.I.), and to be Hon. Lt., M. W. Clark (temp. Lt., Bedf. R.), and to be Hon. Lt., Sept. 12th; W. J. Goddard (temp. Sec. Lt., R. W. Kent R.), Sept. 13th; Sept. 9th; W. G. Walford (temp. Capt., R.E., Spec. Res.), and to be Hon. Capt., A. McBride (Lt., W. Ontario R., C.E.F.), and to be Hon. Lt., R. E. Carles, M.C. (temp. Lt., Bedf. R.), and to be Hon. Lt., L. H. Burrows (temp. Sec. Lt., Manch. R.), J. G. McBride (temp. Sec. Lt., Glouc. R.), J. F. Kidd (temp. Sec. Lt., K.R.R.C.), S. P. B. De Moyse-Bucknall (temp. Lt., attd. R. Fus.), and to be Hon. Lt., Sept. 16th; H. Dinwoodie, M.C. (Lt. Dorset R., Spec. Res.), and to be Hon. Lt., M. G. Robson, M.C. (temp. Lt., York R.), and to be Hon. Lt., P. Sherek (temp. Lt., N. Staff R.), and to be Hon. Lt., A. D. Sinclair (Sec. Lt., High. L.I., T.F.), Sept. 19th; W. C. Treen, M.C., D.C.M. (Sec. Lt., R.F.A., Spec. Res.), Sept. 21st; A. P. Roberts (Sec. Lt., Dorset R., Spec. Res.), Sept. 27th; A. Bairstow (temp. Sec. Lt., W. York R.), Sept. 28th.

The following Prob. Obsvr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsvr. Officers) :—V. O'Neill, Sept. 11th; A. H. Pitton, Sept. 20th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsvr. Officers) :—J. H. Taylor, May 25th; A. W. Higgett, H. N. Bostock, W. C. Parry, C. F. Gates, A. W. Chamberlain, R. O. Hughes, C. S. Trapp, N. M. Simpson, A. G. Nicholls, J. R. Smith, F. J. Fawcett, J. E. West, J. W. Davies, F. C. Marwood, Sept. 20th; A. D. Clarke, S. H. Clemence, G. Cockburn, T. M. Baker, A. R. Bennet, Sept. 21st; D. Macrae, L. Edwards, J. Collins, G. Williams, E. F. Pittaway, Sept. 24th; E. S. Ferguson, H. R. Hopkins, A. H. Taylor, A. R. Miles, F. T. Boland, Sept. 27th; E. Cuthbert, H. Channells, G. O. Parker, A. Talbot, W. Dalgleish, H. T. Ecob, E. Hughes, H. W. Mitchell, A. B. Morris, H. Green, J. Hunt, F. W. Pike, J. R. Weisford, J. W. Palmer, H. T. Martin, F. C. Young, Sept. 28th; W. K. Young (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (S.), Sept. 13th; Flt. Cadet N. P. Field is granted a temp. commn as Sec. Lt. (S.), Sept. 19th.

The following relinquish their commns. on ceasing to be empld. :—Lt. (Hon. Capt.) H. C. Brocklehurst (Capt., Hus.), Sept. 1st; Lt. (Hon. Capt.) J. A. Le Rover, M.C. (Capt., Que. R., C.E.F.), Sept. 9th; Lt. A. C. Watts (Lt., Gord. Highrs.), Sept. 23rd; Maj. F. G. Brodribb (Lt., R.N.), Sept. 26th; Capt. E. G. F. Thompson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., July 24th; Capt. K. C. McCallum, M.C. (Capt., A. and S. Highrs.), relinquishes his commn. on account of ill-health caused by wounds, Oct. 2nd; Lt. J. L. Dickson (Lt., Can. Local Forces) relinquishes his commn. on account of ill-health contracted on active service, Oct. 2nd; Lt. F. D. Howitt resigns his commn. to resume his medical studies, and is granted the hon. rank of Lt., Oct. 2nd; Lt. H. P. Robotham (Glouc. R., S.R.), relinquishes his commn. on account of ill-health, Oct. 2nd; Lt. R. E. Sproule resigns his commn., and is granted the hon. rank of Lt., Oct. 2nd; Sec. Lt. B. B. Sampson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct. 2nd; Lt. J. E. Faid resigns his commn., having been found permanently unfit for further instrn. as Pilot or Obsr., Oct. 2nd.

The following Sec. Lts. resign their commn., having been found permanently unfit for further instrn. as Pilots or Obsvrs. :—A. R. Hungerford, J. Lindsay, G. G. Luffman, C. Peacock, N. Selby, Oct. 2nd. The date of appt. of Lt. G. F. Ward as temp. Capt. (A.) is Aug. 29th, and not as stated in the "Gazette" of Sept. 24th. The initials of F. V. Preston (W. York R., T.F.), are as now described, and not as in the "Gazette" of June 4th, page 6591. The Christian name of P. F. O. Wallace Kirkpatrick-Crockett (late R.N.A.S.) is as now described, and not as in the "Gazette" of Sept. 10th. The surname of P. F. O. René Michael Mulvihill (late R.N.A.S.) is as now described, and not as in the "Gazette" of Sept. 13th, page 10787. The notification in the "Gazette" of June 11th concerning G. M. Roberts is cancelled. Notifications in the "Gazette" of July 5th concerning the following are cancelled) :—Sec Lt. H. R. Watte, sen., Lt. E. Nordberg. Notification in the "Gazette" of July 12th concerning P. F.O. R. H. S. Calver (late R.N.A.S.) is cancelled. Notification in the "Gazette" of July 16th, page 8340, concerning Sec. Lt. F. H. Webb (R. War. R.), is cancelled. Notifications in the "Gazette" of July 19th concerning the following Sec. Lts. are cancelled :—H. S. Gros, A. W. Beamand. Notification in the "Gazette" of July 26th concerning A. L. Coulson is cancelled. Notifications in the "Gazette" of Aug. 20th concerning the following Sec. Lts. are cancelled :—G. W. Parlee, E. I. Riley, J. A. Matthews, J. T. Menzies, H. Walker. Notifications in the "Gazette" of Sept. 6th concerning the following Sec. Lts. are cancelled : (page 10552). Notifications in the "Gazette" of Sept. 10th concerning the following Sec. Lts. are cancelled :—C. S. W. Hall, J. Miller, C. R. Goss. Notifications in the "Gazette" of Sept. 17th concerning the following Sec. Lts. are cancelled :—H. Entwistle, A. E. Watson. Notification in the "Gazette" of Sept. 20th concerning Flt. Cadet F. R. L. Allan is cancelled.

Administrative Branch.—The following Capts. (R.D.C., T.F.) are granted temp. commns. as Majs. (substituted for notification in "Gazette" of Sept. 17th, page 11099) : G. C. Tosswill, E. M. B. H. Gyll-Murray, July 2nd.

Majs. to be Majs. :—W. J. Shields, from (T.), G. L. Wightman, from (T.), Sept. 20th; M. E. Lane, from (A.), Sept. 27th; Sec Lt. (temp. Capt.) L. J. Grant to be temp. Maj. while empld. as Maj., July 26th.

The following are granted temp. commns. as Capts. :—R. A. Laws (Lt., R.N.V.R.), H. S. Parsons (Capt., 58th Bn., C.E.F.), June 1st. Lts. (R.D.C., T.F.), granted temp. commns. as Capts. (substituted for notification in "Gazette" of Sept. 17th, page 11099) :—W. Ricketts, C. F. Newington, E. G. Simpson, H. F. Roberts, J. R. M. Tweddell, J. R. Fox, F. Barclay, July 2nd.

Sec. Lts. to be temp. Capts. while empld. as Capts. :—(Hon Lt.) E. Meynell, D.C.M., from (T.), Aug. 16th; (temp. Lt.) G. T. Bridgewater, Sept. 21st; Lt. A. W. R. Matthews to be temp. Capt. (without pay and allces. of that rank) while empld. as Capt., Oct. 2nd.

The following Sec. Lts. (R.D.C., T.F.) are granted temp commns. as Lts. (substituted for notification in "Gazette," Sept. 17th, page 11099) :—C. Ridsdale, P. C. Ward, July 2nd.

The following are granted temp. commns. as Lts. :—T. M. Winch (Lt., T.F., Res.), July 4th; S. H. H. Heaver (Lt., Ches. R.), Sept. 14th; W. J. Hatcher (temp. Lt., R. Fus.), E. H. Mayers (D. of Corn. L.I.), Sept. 19th.

Lts. (A.) to be Lts. :—W. R. Exley, Aug. 29th; F. J. Kayser, S. R. L. Poole, A. L. Stirk, Sept. 7th; R. G. Young, Sept. 19th; E. H. Dimmock, G. C. Hughes, Sept. 21st; C. L. White, Sept. 23rd. Lts. (O.) to be Lts. :—T. A. W. Foy, Sept. 7th; B. Mason, Sept. 19th; M. Walker, Sept. 21st.

Sec. Lts. to be temp. Lts. whilst empld. as Lts. :—(Hon. Lt.) H. L. Marston, July 24th; J. H. Wright, Sept. 13th; J. S. Archer (late Ornr. and Hon. Lt., R.D.C., T.F.) is granted a temp. commn. as Sec. Lt., and to be temp. Lt. whilst specially empld., Sept. 30th.

The following are granted temp. commns. as Sec. Lts. :—A. R. Barnes (Hon. Lt., late Border R.), and to be Hon. Lt., Sept. 20th; P. Falcon-Cooke (Hon. Capt., Border R.) and to be Hon. Capt.; T. W. Walker (late temp. Lt., Gen. List) and to be Hon. Lt.; B. Berry, W. J. Brown, P. Christopherson, F. G. Corbett, J. M. England, G. A. F. Gibson, H. Gould, A. J. Hall, G. W. Heugh, S. H. Horler, J. Ireland-Low, L. de B. Lewis, C. F. Nurse, P. O. Patterson, S. E. Penton, N. R. Rice, S. M. Stringfield (Prob. Flt. Officer, late R.N.A.S.), A. R. Tarte, G. W. Thomason, E. C. G. Vines (Prob. Flt. Officer, late R.N.A.S.), F. P. Ward, A. Worthington, W. J. Yeldham, Sept. 30th; O. P. Aarvold, Oct. 1st; Lt. (Hon. Maj.) R. L. C. Brooker relinquishes his commn. on ceasing to be empld., Oct. 2nd; Sec. Lt. A. J. Howard relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lt., Aug. 24th. Following Lts. relinquish their commns. on account of ill-health contracted on active service and are granted the hon. rank of Lt. :—R. E. Casalis-de-Pury, L. E. Pulford, Oct. 2nd; Lt. J. H. Turnbull (Lt., Linc. R.) relinquishes his commn. on account of ill-health contracted on active service, Oct. 2nd; Sec. Lt. J. Johnston relinquishes his commn. on account of ill-health and is granted the hon. rank of Sec. Lt., Oct. 2nd; Sec. Lt. A. M. Langdale relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 2nd.

The following Sec. Lts. resign their commns. :—C. De Vitalis, D. Macbeth, W. A. Smith, H. Wheat, C. S. Williams, Oct. 2nd; the date of the appt. of Sec Lt. (Hon. Lt.) S. Waring as Capt. is May 30th, and not as stated in "Gazette," Aug. 23rd. The date of the appt. of Hon. Lt. T. A. N. Beadle is Aug. 8th, and not as stated in "Gazette," Sept. 20th. The date of appt. of Sec Lt. E. Blake is Aug. 14th, and not as stated in "Gazette," Sept. 20th. The initials of Sec. Lt. G. H. Malone are as now described, and not as stated in "Gazette," Sept. 20th. The notification on page 6804 of "Gazette," June 7th, concerning Sec. Lt. (temp. Capt.) S. Morris is cancelled.

Technical Branch.—Lt.-Col. (now temp. Col.) L. F. Blandy, D.S.O., to be Lt.-Col. (Cl. A), and to be temp. Col. whilst empld., April 18th; Maj. F. A. G. Noel to be temp. Lt.-Col. while empld. as Lt.-Col., May 28th. (Substituted for notification in "Gazette," Sept. 16th; Capt. (temp. Maj.) O. Lindquist to be temp. Lt.-Col. while empld. as Lt.-Col., Sept. 12th.

Capts. to be temp. Majs. while empld. as Majs. :—A. M. Lester, July 23rd. (Substituted for notification in "Gazette," Aug. 27th; F. B. Pulham, Aug. 19th; Maj. J. W. K. Allsop to be Maj. from (S.O.), Aug. 29th; W. A. Ogden (Lt., R.N.V.R.), is granted a temp commn. as Capt., Aug. 15th, seny. April 1st; Capt. E. V. King-Hall to be Capt., from S.O.), Sept. 30th; Lt. A. Charig to be Lt., from (Ad.), April 1st.

Sec. Lts. to be temp. Lts. while empld. as Lts. :—F. A. Beale, N. Hemsley, W. Searle, May 1st; (Hon. Lt.) N. W. Birkett, (Hon. Lt.) C. D. Jackman, Aug. 30th; L. Burgoyne, D. W. Dean, from (Ad.), F. G. Eckford, Sept. 1st; E. Taylor, Sept. 18th; C. A. S. Brittenden (Sec. Lt., late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., July 8th.

Sec. Lts. (Ad.) to be Sec. Lts. :—E. L. Hopkins, Sept. 6th; F. N. Gooding, Sept. 11th; W. Seed (date of first commn., May 22nd), Sept. 14th; J. S. Burt, Sept. 16th; Lt. A. H. Francis to be Sec. Lt. (Hon. Lt.), from (Admin.), Sept. 10th.

The following are granted temp. commns. as Sec. Lts. :—F. J. Magee (Asst. Paymr., R.N.V.R.), and to be Hon. Lt., Sept. 16th; E. P. Bennett, S. Freeman, S. Jupp, J. O. Pakenham, C. L. Peppiatt, H. S. Wood, Sept. 30th; Sec. Lt. J. Tyler resigns his commn., Oct. 2nd; the notification on page 8629 of the "Gazette" of July 23rd, concerning Lt. E. G. Thompson is cancelled.

Medical Branch.—The following are granted temp. commns. as Capts. :—H. P. Helsham (Capt., R.A.M.C.), B. H. Swift, M. E. H. Wale, Sept. 30th. The undermentioned are granted temp. commns. as Lts. :—E. E. Rollins, Sept. 27th; A. E. Collie, Sept. 28th.

Dental Branch.—The following are granted temp. commns. as Lts. :—H. H. Chapman, G. H. W. Randell, Sept. 30th.

Memoranda.—Hon. Lt. H. Longton to be Hon. Capt. whilst empld. as Asst. Inspector, A.I.D., Oct. 2nd; Capt. (temp. Maj.) E. H. Cockburn relinquishes his Staff appt. at the Air Ministry, Sept. 9th. The following are granted the hon. rank of Lt. :—L. H. Patterson (late, Lt, R.A.F.), Aug. 7th; P. E. Jeffcock, late Sec. Lt. (Hon. Lt., R.A.F.), Sept. 11th; Capt. C. M. Crowe to take rank and precedence as if his appt. as Capt. bore date Aug. 10th.

War Office, Oct. 4th.

Regular Forces.—Oversea Forces.—Canada.—Manitoba Regt.—Temp. Capt. W. H. Gilroy ceases to be secd. for duty with the R.A.F., July 10th, 1918.

Home Office, Oct. 4th.

The King has been pleased to give orders for the following appointment to the Most Excellent Order of the British Empire for services in the Oversea Colonies, in connection with the War, the appointment to date from June 3rd, 1918 :—

CROWN COLONIES, PROTECTORATES, &c.

Member

Cargill, John Henry, Esq., for services in connection with the Red Cross and Aeroplane Funds, Jamaica.

Air Ministry, Oct. 4th.

R.A.F.—The following temp. appt. is made at the Air Ministry :—Staff Officer,) 2nd Cl. :—Capt. N. D. Newall, and to be temp. Maj. while so empld., June 28th.

The following temp. appts. are made :—Staff Officers, 1st Cl.—And to be temp. Lt.-Cols. while so empld. :—Capt. (temp. Maj.) T. M. Eggar, Sept. 14th; (P.).—J. S. T. Bradley (Capt., M.G.C.), and is granted a temp. commn. as Capt., Aug. 1st.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld., if not already holding that rank :—(Air)—Maj. Hon. M. Baring, O.B.E., May 10th; (T.)—Capt. E. P. Don, Aug. 1st.

Staff Officers, 3rd Cl.—Lt. (temp. Capt.) V. Stranders, and to retain his temp. rank while so empld., vice Capt. A. E. Hartley, April 24th; (P.)—Capt. E. J. Needham, Aug. 1st.

Staff Officer, 4th Cl. (1st Gr.).—Capt. C. P. D. Cooper, Aug. 21st.

Staff Officers, 4th Cl. (2nd Gr.).—Capt. H. W. J. Chipchase, Capt. W. J. Coombes, Capt. A. J. Woodhouse, Aug. 21st; Lt. (temp. Capt.) T. Smith, Sept. 18th.

Flying Branch.—Maj. F. W. K. Davies, from (T.), to be Capt. (A.), and to be Hon. Maj., May 11th.

Lts. to be temp. Capts. while empld. as Capts (A.).—J. W. Beebee, Aug. 25th; H. Sanders, Sept. 17th; R. Grice, Sept. 21st, A. C. Kiddie, H. A. White, Sept. 23rd.; W. Ledlie, Sept. 28th.

Capt. W. H. Chisman to be Capt. (A.), Sept. 18th.

Lt. (Hon. Capt.) S. J. Woolley to be temp. Capt. while empld. as Capt. (A. and S.), May 1st.

Capt. T. C. Lloyd to be Capt. (K.B.), Sept. 10th.

Lt. H. Hadley to be temp Capt. while empld. as Capt. (K.B.), Sept 30th.

Capt G. E. Wright to be Capt. (O.), Aug. 1st.

Sec. Lt. (Hon. Lt.) G. M. Dawson, M.C., to be temp. Capt. while empld. as Capt. (O.), Sept. 17th.

Capt. W. R. D. Acland to be Capt. (S.), Sept. 9th.

Lt. H. E. Haslehurst to be Lt. (A.), from (T.), Sept. 23rd.

Lt. I. B. Wallas to be Lt. (A.), from (Obsr. Officer), June 14th (substituted for notification in "Gazette," Sept. 10th).

Lt. M. F. R. Howman to be Lt. (Dir.), from (K.B.), July 17th (substituted for notification in "Gazette," Sept. 10th.

Lt. J. G. Munro (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A.), and to be Hon. Lt., May 10th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.)—W. Howarth, May 13th; G. H. Bond, June 2nd.

Sec. Lt. J. L. Colbourne (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A.), June 14th. (Substituted for notification in "Gazette," July 19th.)

Sec. Lt. P. V. Penhallvrick (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A.), June 14th. (Substituted for notification in "Gazette," July 19th.)

Sec. Lt. S. H. Potter (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A.), July 30th. (Substituted for notification in "Gazette," Sept. 6th, concerning S. H. Porter.)

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.)—J. H. Lamb, July 15th; L. Arnold, A. Ussher, Sept. 19th; A. G. J. Whitehouse, E. W. Jordon, E. Archer, Sept. 20th; C. A. Giddings, W. F. Shaylor, E. S. Scott, H. G. Mayhew, R. Pyper, W. O'Brien, D. Cryan, Sept. 21st; P. K. Homer, B. A. Davy, Sept. 22nd.

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Flt. Cadet H. J. Smith is granted a temp. commn as Sec Lt. (A.), June 14th. (Substituted for notification in "Gazette," Sept. 20th.)

Cadet B. J. Hill is granted a temp. commn. as Sec. Lt. (A.), Aug. 10th.

Sec. Lt. W. A. Russell (late Gen. List, R.F.C., on prob.) (date of 1st commn., March 24th), is confirmed in his rank as Sec. Lt. (A and S.), May 9th.

D. J. C. McCowan (Lt., Sco. Rif., T.F.), is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Lt., July 31st.

The following Flt. Cadets are granted temp. commns. as Sec Lts. (A. and S.)—J. J. Melvill, Aug. 25th; A. Smith, Sept. 18th; H. S. Izzett, Sept. 20th; H. O. K. Ayling, Sept. 21st; A. Hart, C. J. A. Berkeley, Sept. 23rd.

Sec. Lt. V. T. H. Ffrench (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (K.B.), Aug. 31st. (Substituted for notification in "Gazette," Sept. 17th.)

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. G. Smith, D. A. F. Vavasour, G. P. Woods, W. J. Large, J. H. McLellan, J. W. Morris, Sept. 13th; A. Iredale, C. E. Wainwright, E. A. Seal, C. E. J. Dingle, H. G. Biltcliffe, W. H. Pearce, E. Till, Sept. 23rd; D. McG. Lapraik, Sept. 26th; P. E. Tottle, R. R. Simmons, Sept. 28th, C. C. Carlow, H. Williams, A. K. Smith, F. R. G. Spikins, H. G. B. Lovatt, H. MacD. Brettell, G. C. R. Parker, S. H. Tirrell, D. F. Harrison, Oct. 1st.

Lt. G. P. Wakeham relinquishes his commn. on ceasing to be empld., Oct. 5th.

Lt. J. Wedgwood relinquishes his commn. on account of ill-health caused by wounds and is granted the hon. rank of Lt., Oct. 5th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service and are granted the hon. rank of Lt. :—W. H. Dickens, S. Evans, W. H. G. Lowther, L. Mendelssohn, E. S. Pfeiffer, Oct. 5th.

Lt. G. H. G. Smyth resigns his commn., Oct. 5th

Sec. Lt. N. V. Grimsditch resigns his commn. and is granted the hon rank of Sec. Lt., Oct. 5th.

The following Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.—A. W. Campbell, H. H. Cant, A. E. Holmes, H. E. Norman, C. F. Phillips, H. A. D. Phillips, H. H. Ross, P. Rushworth, H. Smith, L. J. Whitehead, Oct. 5th.

The Christian name of Flt. Cadet Smith Green is as now described and not "Sydney" as in "Gazette," Sept. 20th

The Christian name of Flt. Cadet Harold Paul Lawson is as now described and not "Harold Hall" as in "Gazette," Aug. 6th.

The name of Flt. Cadet John Howden Cook is as now described and not as in "Gazette," July 20th.

The Christian name of James Somerville is as now described, not "George" as in "Gazette," Sept. 20th.

The initials of H. A. Heritage are as now described and not as in "Gazette," July 19th.

The surname of R Ramsay is as now described and not as in "Gazette," Sept. 6th.

The rank of Lt. M. E Dezee is as now described and not as in "Gazette," Aug. 20th.

The initials of Lt. (temp. Capt.) J. G. Gillanders are as now described and not as in "Gazette," Aug. 27th

The notifications in "Gazettes," June 7th and 21st, concerning Sec. Lt. (Hon. Maj.) and Capt. F. W. K. Davies are cancelled.

The notification in "Gazette" of July 30th concerning A. K. Mackereth is cancelled.

The notifications in "Gazette," July 26th, concerning the following are cancelled :—W. E. Lewis, A. J. Mantle, H. M. Schofield, F. C. Wareham, J. P. Corkery, H. B. Steckley, S. W. P. Foster-Sutton, D. J. Muil.

The notification in "Gazette," July 30th, concerning Sec. Lt. W. A Russell is cancelled.

The notification in "Gazette," Aug. 20th, concerning Philip Arthur Classon is cancelled.

The notifications in "Gazette," Aug. 23rd, concerning the following officers are cancelled :—R. M. Doyle, J. F. Forster, H. A. Heritage.

The notification in "Gazette," Sept. 3rd, concerning Joseph Bolton is cancelled.

The notifications in "Gazette," Sept. 6th, concerning the following officers are cancelled :—T. A. Greig, D. J. MacGowan

The notification in "Gazette," Sept. 10th, concerning H. A Edridge-Green is cancelled.

The notification in "Gazette," Sept. 24th, concerning W. R. Barnett is cancelled.

The notification in "Gazette," Oct. 1st, concerning Sec. Lt. A. R. Hungerford is cancelled.

Administrative Branch.—Lts. to be temp. Capts. while empld. as Capts. :—A. S. Thompson, from (A.), April 4th; H. B. Hamilton, Sept. 24th; H. Gwynne-Smith, R. P. Lamb, Sept. 19th; G. F. Golding, Sept. 30th; G. F. Ansell, P. W. Malthouse, Oct. 1st.

Sec. Lts. to be temp. Capts. while empld. as Capts. :—(Hon. Capt.) J. Graham, May 6th; W. F. Dean, Aug. 28th; H. Rogers, Sept. 28th.

Capt. D. P. Rowland is reclassified (Ad.), from (O.) while empld. as Lt., Aug. 23rd.

Lts. (A.) to be Lts.—S. I. Chapman, F. R. Hunt, Aug. 24th.

The following are granted temp. commns. as Lts.—J. B Love (Lt., Manch. R.), Sept. 20th; G. Southern (Lt. Gord. Highrs.), Sept. 24th; E. W. P. Newman (Capt., Sco. Rif.) and to be Hon. Capt., Sept. 25th.

Lt. H. M. Tayler to be Lt., from (O.), July 26th (substituted for notification in "Gazette," Aug. 6th).

Sec. Lts. to be temp. Lts while empld as Lts.—L. S. Pape, July 1st; K. M. Grahame, July 26th; F. H. Kemp, from (T.), Aug. 28th; N. G. Boggon, Sept. 16th; W. W. Shuker, Sept. 17th; J. C. F. Williams, Sept. 30th.

The following are granted temp. commns. as Sec. Lts.—N. G. Boggon (temp. Sec. Lt., attd. Northd. Fus.), June 29th; C. G. Sharman, Sept. 12th; W Blairman, Sept. 15th; E. H. Hebden-Phillips, Sept. 21st; E. J. Broadbent, Sept. 23rd; C. M. Byham, N. McL. Kennedy (Hon. Capt., Ret.), and to be Hon. Capt., Sept. 28th; H. L. A. Griffith, Sept. 30th; C. O. Trew, W. J. Wilkinson, Oct. 1st.

Sec. Lt. (Hon. Lt.) F. J. Tussaud relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon rank of Lt., Oct. 5th.

The following Sec. Lts. relinquish their commns. on acct. of ill-health contracted on active service, and are granted the hon. rank of Sec. Lt.—J. G. Hall, A. N. Marples, Oct. 5th.

The surname of Lt. L. B. Goodyer is as now described, and not as in "Gazette," July 23rd.

The notification in "Gazette," Aug. 20th, concerning Harry Lees Smith is cancelled

The notification is "Gazette," Sept. 24th, concerning Christopher Wallace is cancelled.

The notification in "Gazette," June 7th, concerning Sec. Lt (Hon. Lt.) H. M. Woodhouse is cancelled.

The notification in "Gazette," Sept. 24th, concerning Lt. D. H. Houston is cancelled.

Technical Branch.—F. C. Jenkins (Capt. Lond R.) is granted a temp. commn. as Capt., April 1st

Lts. to be temp. Capts while empld. as Capts.—F. W. Wright, May 20th; O. M. D. Bell, Sept. 6th; P. S. Laughton, Sept. 17th; H. C. Bobbett, J. Regan, Sept. 28th; E. N. L. White, Oct. 1st.

Sec. Lt. J. W. White to be temp. Capt. while empld. as Capt., Sept. 28th

Capt. E. E. Adams to be Capt., from (Ad.), Sept. 10th.

Capt. A. Clayton to be Capt., from (S.O.), Sept. 23rd.

Sec. Lts. to be temp. Lts. while empld. as Lts.—G. C. Moore, June 21st; (Hon. Lt.) J. L. Dearing, Sept. 2nd; (Hon. Lt.) H. Davis, Sept. 19th; C. H. N. Nunn, Sept. 26th; R. A. Munday, Sept. 30th.

Sec. Lt. (on prob.) H. P. Griffits is confirmed in his rank as Sec. Lt., and to be temp. Lt. while empld. as Lt., Sept. 17th

Lt. M. A. J. Orde to be Lt., from (A.), Sept. 12th

Lt. J. Anstey to be Lt., from (O.), Sept. 21st.

H. H Bond (Lt., Labour Corps) is granted a temp. commn., as Lt, July 22nd.

H. L. Bown is granted a temp. commn. as Sec. Lt., Oct 1st.

Sec. Lt. E. R. W. Lincoln to be Sec. Lt., from (Ad.), Sept. 28th.

Lt. (temp. Capt.) F. B. Bayly (Lt., A. Cyc. Corps), relinquishes his commn. on acct. of ill-health, July 27th.

Sec. Lt. (Hon. Lt.) E. McM. Howes relinquishes his commn on acct. of ill-health caused by wounds, and is granted the hon. rank of Lt., Oct. 5th.

Sec. Lt. D. P. Glazer relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 5th.

Sec. Lt. W. Baines resigns his commn., and is granted the hon. rank of Sec. Lt., Oct. 5th.

The initials of Sec. Lt. H. L. Whitelaw are as now described, and not as in "Gazette" of Sept. 13th

The notification in "Gazette," July 9th, concerning P. S. Beaufort is cancelled

Medical Branch.—C. D. H. Corbett (late Capt., R.A.M.C.), is granted a temp. commn. as Capt., Sept. 12th, and to be temp. Lt.-Col. while specially empld., Oct. 1st.

Maj. C. H. S. Taylor to be temp. Lt.-Col. while specially empld., Oct. 1st.

W. J. Lytle is granted a temp. commn. as Lt., Oct. 3rd.

Memoranda.—Lt.-Col. J. C. Porte, C.M.G., to be temp. Col. while specially empld., Oct. 5th.

Sec. Lt. G. N. McHardy to take rank and prec. as if his appt. as Sec. Lt. bore date March 13th.

Hon. Lt. H. A. Benson relinquishes his commn. on ceasing to be empld., Sept 20th.

War Office, Oct. 7th.

His Majesty the King has been graciously pleased to approve of the award of the Military Medal for bravery in the field to the under-mentioned non-commissioned officer :—

30869 Serjt. G. R. Smith, R.A.F. (Leeds).

War Office, Oct. 8th.

Territorial Force.—Yeomanry.—Capt. A. W. W. Groome is secd. for service with R.A.F., Jan. 9th, 1918.

The names of the undermentioned have been brought to the notice of the Secretary of State for War for valuable services rendered in connection with Military Operations in Hedjaz :—

Royal Air Force.

Stent, Capt. (Temp. Maj.) F. W., M.C.
Watson, Lt. J. M.
Gibson, 1753 Chief Mech. (Actg. Chief Master Mech.) G. A. F.
Forder, 39122 Cpl. Mech. R. W.
Ross, 49766 Cpl. Clk. A.
Stokes, 3326 Serjt. Mech. T. R.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

Oct. 6th.—Royal Air Force contingents working with the Navy on the Belgian coast have from Sept. 20th to Oct. 5th co-operated with the offensive launched by the Belgian army. Weather conditions on three days have not been favourable for flying, but during the period under review 72 tons of bombs have been dropped on the enemy's railway communications and dumps behind the battle front. Several trains have been hit, three of which have been set on fire.

Explosions have been caused in important munition dumps and fires started among sheds and railway buildings, and numerous casualties have been caused to reinforcements moving by road, and convoys of transport have been held up by the attacks of low-flying aeroplanes.

The ports of Ostend, Zeebrugge, and Bruges have been kept under observation, and one destroyer and one submarine have been attacked.

In aerial fighting 25 enemy machines have been destroyed, and seven machines driven down out of control.

Ten of our machines are missing.

MILITARY.

G.H.Q. Communiqués.

Oct. 1st.—On Sept. 30th the weather was most unsuitable for flying. Photography was practically impossible, but, in spite of low clouds and frequent heavy showers, observation for our artillery fire was kept up, and a number of reconnaissance flights were executed. By flying low, our contact patrols succeeded in keeping in touch with our advancing lines of infantry.

Nine tons of bombs were dropped by us during the 24 hours on enemy troops, transport, trains, and bridges.

The enemy showed no activity in the air.

Two of our machines are missing.

In addition to the 27 enemy machines already reported as destroyed on Sept. 29th, another hostile machine is now known to have been brought down in air fighting on that day.

Oct. 2nd, 7.40 p.m.—Throughout October our squadrons carried on their work in fine but cloudy weather.

A large number of targets were reported to our batteries, and the effect of the fire of our guns was observed as usual. Our low-flying patrols were very active, raking enemy trenches with machine-gun fire, scattering parties of German troops, and stampeding gun teams by well-directed bombing. More than 1,700 photographs were taken.

Thirty tons of bombs were dropped by us by day and 16 tons by night. The railway junctions in the area behind Cambrai, at Valenciennes, Aulnoye, and Busigny were heavily attacked, and two were set on fire.

There was a good deal of fighting in the air on the German side of the lines. Twenty-one enemy machines were destroyed and eight driven down out of control. Two balloons were brought down in flames.

Fifteen of our machines are missing.

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Oct. 3rd, 7.18 p.m.—Flying operations on Oct. 2nd were handicapped by clouds and rain, but many reconnaissances were carried out, and a good deal of observation for our artillery was accomplished.

In the course of the day 43 tons of bombs were dropped on selected targets behind the German lines.

A concentrated attack was made on the railway junction at Aulnoy (south of Valenciennes), in the course of which an ammunition train was blown up and rolling stock set on fire. Aerial photographs show that great damage has been done, and much disorganisation caused to this centre of enemy communication.

Lille and Valenciennes stations, as well as many targets in the battle area, were also heavily bombed.

In air fighting 15 hostile machines were destroyed and five driven down out of control. Another hostile machine was driven down and compelled to land in our lines. Nine German balloons were shot down in flames.

Eight of our machines are missing.

One of the machines reported as missing on Oct. 2nd has now returned.

At night the weather made flying almost impossible, but before dawn one of our squadrons succeeded in dropping a ton of bombs behind the German lines.

All the machines returned safely.

Oct. 4th, 8.10 p.m.—On Oct. 3rd squadrons continued the intense activity which they have maintained on all possible occasions on the battle front.

Every form of co-operation with our troops was carried out. Targets were reported to our artillery and contact was kept with our Tanks and advancing infantry. Long-distance reconnaissances and photography were accomplished. Counter-attack patrols successfully forestalled the enemy's intentions by warning our headquarters. Our advancing infantry were screened by smoke curtains caused by smoke bombs dropped from the air, and our forward machine-guns were supplied with ammunition dropped for them by our aviators.

At the same time our fighting squadrons kept the air free from hostile machines and enabled this work to be carried out successfully. Twenty-seven hostile machines were destroyed in aerial combat and five others were driven down out of control. One hostile balloon was burnt. In addition concentrations of fighting machines harassed the enemy's troops and transport from a low height with bombs and machine-gun fire.

Our bombing squadrons dropped 26 tons of bombs by day and 30 tons by night. Considerable damage was wrought on enemy junctions and communications.

Twelve of our machines are missing.

Oct. 5th, 7.40 p.m.—On Oct. 4th our squadrons vigorously continued their operations. Many targets were reported to our artillery, and much valuable reconnaissance and photographic work was accomplished.

Our bombing machines were again active, 21 tons of bombs being dropped by day and 25 tons by night. The railway junctions in rear of the enemy's battle front were attacked by night. Damage to the permanent way and rolling stock resulted

In air fighting 14 hostile machines were destroyed and 6 driven down out of control.

Eight of our machines are missing

Oct. 6th, 7.15 p.m.—On Oct. 5th our squadrons continued their work in cloudy and unsettled weather. Artillery observation, reconnaissance, and photographic work were accomplished.

Contact was kept with our advancing infantry, and the positions of our troops and the movements of the enemy rapidly reported to the various headquarters Twenty-two and a half tons of bombs were dropped by us on suitable targets behind the enemy's lines.

German fighting machines showed some activity in the morning, when several combats took place. As the result of these encounters eight hostile machines were shot down and three driven down out of control. Four German balloons were also destroyed. In addition, one enemy machine was shot down by our anti-aircraft guns.

Nine of our aeroplanes are missing.

A strong wind and low clouds greatly restricted our operations at night, but one of our squadrons succeeded in dropping over a ton of bombs on railway junctions in rear of the enemy's positions. One of these machines has not yet been located.

Oct. 7th, 7.14 p.m.—On Oct. 6th bad weather restricted flying operations, but useful reconnaissance and artillery observation work was completed. The positions of our infantry on the battle fronts were reported, and over seven tons of bombs were dropped on suitable targets in rear of the enemy's lines.

German aircraft showed very little activity. One enemy balloon was destroyed.

Five of our machines are missing.

Our night-bombing squadrons took advantage of a slight improvement in the weather, and attacked important railway junctions on the enemy's communications. Sixteen and a half tons of bombs were dropped, and many direct hits obtained on the railways.

War Office Communiqués.

The G.O.C. Palestine reports:—

Oct. 3rd.—On Oct. 2nd the enemy aerodrome and railway establishments at Rayak were heavily bombed from the air.

Oct. 4th.—The G.O.C. British Forces in Italy reports:—

Clouds and rain have interfered considerably with work in the air. Since my last report the Royal Air Force have destroyed three enemy machines without loss to themselves.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the Royal Air Force, Independent Force, in France:—

Oct. 1st.—In conjunction with the operations of the First American Army, our squadrons bombed Metz-Sablon station and Frescaty aerodrome during the night of Sept. 30th-Oct. 1st. Bad weather obscured observation.

The blast furnaces at Burbach were also attacked.

One of our machines has not returned.

Oct. 2nd.—The machine reported missing on the night of Sept. 30th-Oct. 1st has now been located. This machine bombed the railway station at Mezières

On Oct. 1st one of our squadrons bombed the railway at Trèves Observation was impossible, owing to thick clouds.

All our machines returned safely.

Oct. 4th.—On the night of the 3rd-4th inst. our machines bombed the railways at Metz-Sablon and the hostile aerodromes at Morhange and Frescaty. Generally the visibility was too bad to allow of observation, but a fire and an explosion were observed at Frescaty.

All our machines returned

Oct. 5th.—On the morning of the 5th instant our machines attacked the railways at Metz-Sablon with good results. Eleven direct hits were obtained on the sidings and railway lines.

All our machines returned.

Oct. 6th.—In addition to the bombing reported in yesterday's communiqué, our machines bombed Kaiserslautern and Pirmasens with good results.

Very heavy fighting took place all the way to and from the objectives. Four enemy aeroplanes were shot down out of control, and four of our machines did not return.

On the night of Oct. 5th-6th our machines dropped 12¼ tons of bombs on the railways at Mezières, Metz-Salon, Thionville, and Courcelles, the aerodromes at Morhange and Frescaty, and the Burbach works. Nine heavy bombs fell in the factory at Burbach, and a fire broke out at Courcelles.

All our night-flying machines returned.

THE CASUALTY LIST.

NAVAL.

Reported Oct. 7th.

Previously reported Missing, subsequently reported Prisoner, now presumed Killed.—Gray, Flt. Sub-Lt. A. T., R.N.

MILITARY.

Reported Oct. 2nd.

Australian Force.—Accidentally Killed.—Allen, Lt. G. D., F.C.

Missing.—Carter, Lt. D. C., F.C.; Eddie, Sec. Lt. M. H., F.C.; Lockley, Lt. A. H., F.C.; Taplin, Lt. L. T. E., D.F.C., F.C.

Newfoundland Contingent.—Previously reported Missing, now reported Wounded and Prisoner in German Hands.—Sellars, Lt. F. M., R. Newf. Regt., attd. R.A.F.

Reported Oct. 3rd.

Previously reported Missing, now reported Prisoner in German Hands.—Miles, Sec. Lt. A. A., R.F.C.

Reported Oct. 4th.

Canadian Force.—Wounded.—Black, Lt. F. G., Cent. Ont. R., attd, R.A.F.; Tanner, Maj. F. I., N.S.R., attd. R.A.F.

Missing.—Brisbin, Lt. H. V., Cent. Ont. R., attd. R.A.F.; Pitman, Lt. R. C., N.S.R., attd. R.A.F.

Previously reported Missing, now reported Prisoner in German Hands.—Belliveau, Lt. A. H., Can. For. Corps, attd. R.A.F.

Reported Oct. 7th.

Previously reported Missing, now reported Killed.—Whitehead, Lt. A. G., W. Yorks. R., attd. R.F.C.

Australian Force.—Previously reported Missing, now reported Prisoner in German Hands.—McCulloch, Sec. Lt. A. F., F.C.

Canadian Force.—Died of Wounds.—Thompson, Lt. A. H., Cent. Ont. R., attd. R.A.F.

Accidentally Killed.—Fisher, Lt. S. J., B.C.R., attd. R.A.F.

Missing.—Helwig, Lt. N. W., Cent. Ont. R., attd. R.A.F.: Kewley, Lt. B. H., Manch. R., attd. R.A.F.

Reported Oct. 8th.

Previously reported Missing, now reported Killed.—Perkins, Sec. Lt. J. F. R. L., R.F.C.

Australian Force.—Wounded.—Baillieu, Lt. T. L., F.C.; Ross, Lt. J. S., F.C.; Sewell, Lt. F., F.C.

Previously reported Missing, now reported Prisoner in German Hands.—Taplin, Lt. L. T., F.C.

AIR FORCE.

Reported Sept. 28th.

Killed.—O'Connor Glynn, Lt. E. P., R.A.F.
Talbot, Sec. Lt. R. F., R.A.F.
Wilson, Sec. Lt. H. H., R.A.F.

Died.—Sawyer, Lt. R. H., R.A.F.

Previously reported Missing, now reported Killed.—Burdick, Capt. F. W., Lond. R. (T.F.) and R.A.F.
Dawson, Lt. W., R.A.F.

Previously reported Missing, now reported Died of Wounds.—Levick, Sec. Lt. C., R.A.F.

Wounded.—Barker, Sec. Lt. F., R.A.F.; Bates, Sec. Lt. F. F., R.A.F.; Dennis, Sec. Lt. J. G., R.A.F.; Greer, Sec. Lt. T. E., R.A.F.; Jackson, Sec. Lt. W. E., R.A.F.; Knight, Lt. G. H., R.A.F.; Levy, Lt. B. A., R.A.F.; Matthews, Lt. A. H., R.A.F.; Potter, Lt. L., R.A.F.; Ramsey, Sec. Lt. H. G., R.A.F.; Rowley, Sec. Lt. S. E., R.A.F.; Vascoe, Lt. F., R.A.F.; Whitaker, Sec. Lt. R. J., R.A.F.

Missing.—Bellord, Sec. Lt. C. E., R.A.F.; Chalkin, Sec. Lt. W. J. N., R.A.F.; Davies, Sec. Lt. H., R.A.F.: Guild, Sec. Lt. C., R.A.F.; Harrison, Sec. Lt. A. G., R.A.F., Heine, Lt. R. W., R.A.F.; McKenzie, Sec. Lt. A. D., R.A.F.; Marchant, Lt. E. A., Lond. R. and R.A.F.; Ogilvy, Lt. W. F., R.A.F.; Richardson, Sec. Lt. J. B., R.A.F.; Shipton, Sec. Lt. G. A., R.A.F.; Tapping, Sec. Lt. A., R.A.F.

Reported Sept. 30th.

Killed.—Appley, Sec. Lt. C. W., R.A.F.
Barnet, Sec. Lt. W. R., R.A.F.
Cope, Capt. W. G., Yorks. R. and R.A.F.
Elworthy, Sec. Lt. S. R., R.A.F.
Hill, Lt. H. B., R.A.F.

Previously reported Missing, now reported Killed.—Amos, Sec. Lt. J., R.A.F.
Borrowman, Sec. Lt. J. J., R.A.F.
Glasse, Lt. E. S., R.A.F.

Previously reported Missing, now reported Died of Wounds.—Locke, Sec. Lt. E. G., R.A.F.

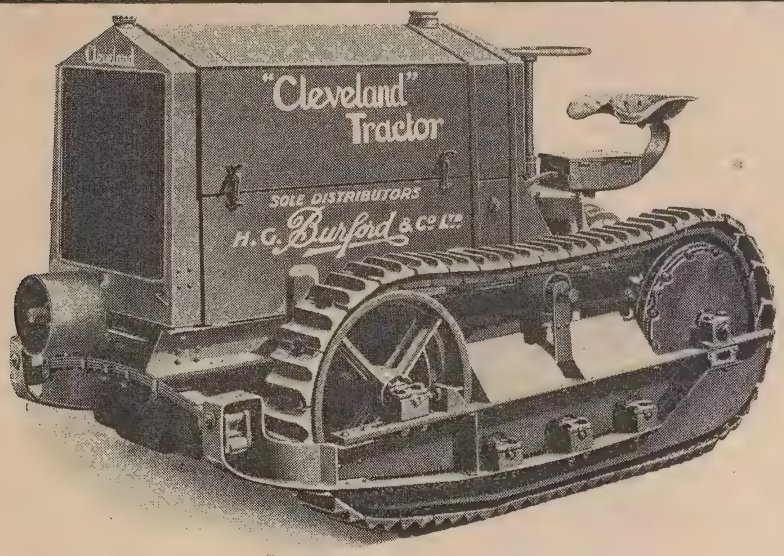
Wounded.—Alvord, Sec. Lt. C. H., R.A.F.; Kibby, Sec. Lt. H. C., R.A.F.; Marshall, Sec. Lt. R. M., R.A.F.; Osman, Lt. F. L., R.A.F.; Riley, Sec. Lt. W., R.A.F.; Shaw, Sec. Lt. B., R.A.F.; Thompson, Lt. C. R., R.A.F.

Missing.—Dilloway, Sec. Lt. R. H., R.A.F.; Evans, Sec. Lt. W. H., R.A.F.; Johns, Sec. Lt. W. E., R.A.F.; Lipsett, Sec. Lt. R. S., R.A.F.; McDonald, Lt. J., R.A.F.; Reid, Sec. Lt. J. E., R.A.F.; Rose, Sec. Lt. R. H., R.A.F.; Russell, Sec. Lt. C. G., R.A.F.; Smith, Sec. Lt. H. S., R.A.F.; Stockman, Lt. E. J., R.A.F.

Corrections.—Wounded.—Kilby, Sec. Lt. F. D., R. War. R. and R.A.F., should read: Kilby, Sec. Lt. F. G., R. War. R. and R.A.F.; Vascoe, Lt. F., R.A.F., should read: Pascoe, Lt. F., R.A.F.

Reported Oct. 1st.

Killed.—McKil, Sec. Lt. R., R.A.F.
Misenhimer, Sec. Lt. W. K., R.A.F.
Nichols, P/F/O D. M., R.A.F.
Rose, Sec. Lt. A., R.A.F.
Sanders, Sec. Lt. R. H., R.A.F.
Thompson, Sec. Lt. C. F. J., R.A.F.



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PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Edwards, Lt. C. G., R.A.F.
Pim, Lt. T., R.F.A. and R.A.F.
DIED.—Jennings, Lt. F. R., R.A.F
WOUNDED.—Baker, Sec. Lt. A. A., R.A.F.; Bright, Lt. J. M., R.A.F.; Cooper, Lt. H., R.A.F.; Davis, Sec. Lt. L. S., R.F.A. and R.A.F.; Irwin, Capt. W. R., R.A.F.; Jones, Capt. R. T., Buffs (E. Kent R.) and R.A.F.; Linforth, Lt. C., R.A.F
MISSING.—Amey, Sec. Lt. A. E., R.A.F.; Anderson, Lt. G. F., R.A.F.; Baddeley, Sec. Lt. E. L., R.A.F.; Bowen, Lt. L. G., R.A.F.; Broadley, Lt. T. H., R.A.F.; Campbell, Sec. Lt. A. B. D., R.A.F.; Finch, Sec. Lt. F. E., R.A.F.; Holleran, Capt. O. C., R.A.F.; Johnston, Sec. Lt. W. A., R.A.F.; Payne, Sec. Lt. P., R.A.F.

Reported Oct. 2nd.

KILLED.—Freeman, Sec. Lt. H. A., R.A.F.
Lewis, Lt. A. V., R.A.F.
Morgan, Lt. E. S., R.A.F.
Parks, Sec. Lt. A. E., R.A.F.
Simpson, Sec. Lt. R., R.A.F.
Smith, Sec. Lt. W. P., R.A.F.
MacNamara, Lt. A. W., R.A.F.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Cuthbert, Lt. J. B., R.A.F.
WOUNDED.—Danger, Lt. E. O., R.A.F.; Eveleigh, Sec. Lt. E. P., R.A.F.; Kullberg, Lt. H. A., R.A.F.; Matthews, Sec. Lt. G. G., R.A.F.; Moss, Sec. Lt. C. H., R.A.F.; Mullen, Sec. Lt. H. S., R.A.F.; Nowell, Sec. Lt. R. P., R.A.F.
MISSING.—Adams, Sec. Lt. N. F., R.A.F.; Anslow, Sec. Lt. F. F., R.A.F.; Ayrton, Capt. F. A., R.A.F.; Cole, Sec. Lt. W. H., R.A.F.; Jenkins, Sec. Lt. B. P., R.A.F.; Keble, Sec. Lt. F. J., R.A.F.; Mercer, Sec. Lt. H., E. Lanc. R. and R.A.F.; Naylor, Lt. C. B., R.A.F.; Senecal, Sec. Lt. C. H., R.A.F.; Stone, Sec. Lt. R. H., R.A.F.
INTERNED.—Cox, Lt. F. B., R.A.F.
Harrison, Capt. W. K. E., R.A.F.
Lister, Lt. J. J., R.A.F.
MacDonald, Lt. J. J., R.A.F.
McManus, Sec. Lt. G. E., R.A.F.
Thomas, Sec. Lt. G., R.A.F.

Reported Oct. 3rd.

KILLED.—Bourke, Sec. Lt. T. L., R.A.F.
Clarke, Sec. Lt. J. F., Middx. R., attd. R.A.F.
Coghill, Sec. Lt. A. O., R.A.F.
Plummer, Lt. F., R.A.F.
Rose, Sec. Lt. S. L., R.A.F.
Savage, Lt. H. L., R.A.F.
Steward, Sec. Lt. R. T., R.A.F.
Wilkin, Lt. G. S., R.A.F.
WOUNDED.—Coler, Lt. E. S., R.A.F.; Corbett, Lt. E. J., R.A.F.; Dixon, Sec. Lt. B., R.A.F.; Dixon, Capt. G. C., H.L.I. and R.A.F.; Hawthorn, Lt. S. J., N. Staff R. and R.A.F.; Kettener, Lt. H. M., R.A.F.; Sutton-Page, Capt. P., M.C., R. Fus., attd. R.A.F.
MISSING.—Arnott, Sec. Lt. L., R.A.F.; Bishop, Sec. Lt. N. F., R.A.F.; Bryars, Sec. Lt. G. L., R.A.F.; Chreiman, Sec. Lt. W. W., R.A.F.; Elder, Sec. Lt. J. J., R.A.F.; Felton, Sec. Lt. H. A., R.A.F.; Ferreira, Sec. Lt. J. P., R.A.F.; Fleming, Sec. Lt. P. J. A., R.A.F.; Glen, Lt. J., Sco. Rif. and R.A.F.; Kellow, Sec. Lt. W., R.A.F.; Kempsall, Sec. Lt. H. T., R.A.F.; King, Sec. Lt. F. W., R.A.F.; Matthews, Sec. Lt. J. A., R.A.F.; Montgomery, Lt. J. R., R.A.F.; Norris, Sec. Lt. B. J., R.A.F.; Ostler, Lt. A., M.C., R.F.A. and R.A.F.; Senior, Sec. Lt. H. H., R.A.F.; Simmonds, Sec. Lt. L. B., R.A.F.; Timson, Lt. P. W. J., R.A.F.; Walker, Sec. Lt. J. E., R.A.F.; Wilson, Sec. Lt. W. A., R.A.F.; Wright, Lt. E. F., R.A.F.; Yeomans, Lt. J. H. M., N. Staff R., attd. R.A.F.

Reported Oct. 4th.

KILLED.—Kendall, Sec. Lt. F. D., R.A.F.
Jackson, Lt. C. T., N. Lancs. R. and R.A.F.
O'Connor, Capt T., R.A.F.
Rourke, Sec. Lt. B. S., R.A.F.
Ralph, Sec. Lt. F. J., R.A.F.
Rymal, Sec. Lt. W. A., R.A.F.
Smyth, Sec. Lt. G. H., R.A.F.
Stone, Lt. W. H., R.A.F.
WOUNDED.—Band, Sec. Lt. L. C., R.A.F.; Clark, Lt. C. H., R.A.F.; Cotter, Sec. Lt. B. C., R.A.F.; Grant, Sec. Lt. A. G., H.L.I. and R.A.F.
MISSING.—Andrews, Sec. Lt. E. B., R.F.A. and R.A.F.; Cobham, Lt. R. L., S. Notts Yeo., attd. R.A.F.; Chainey, Sec Lt. F. H., Suff. R., attd. R.A.F.; Cole, Sec. Lt. R. H., R.A.F.; Dodd, Lt. H. R., R.A.F.; Down, Sec. Lt. R. E., R.A.F.; Fairhurst, Sec. Lt. A., R.A.F.; Gallagher, Lt. E. S., R.A.F.; Hyde, Lt. H. E., R.A.F.; Jeffkins, Sec. Lt. E. C., R.A.F.; Johnson, Lt. F. R., R.A.F.; Lacy, Sec. Lt. J. B., R.A.F.; Miller, Sec. Lt. W. J., R.A.F.; Mitchell, Sec. Lt. G. W., Yorks R. and R.A.F.; Monaghan, Lt. H. B., R.A.F.; Norcross, Lt. B., R.A.F.; Owen, Sec. Lt. R. E., R.A.F.; Phillips, Sec. Lt. T. M., R.A.F.; Toulmin, Lt. H., M.C., R.A.F.; Whalley, Capt. R. L., R.A.F

Reported Oct. 5th.

KILLED.—Desmond, Sec. Lt. S. M., R.A.F.
Phillips, Capt. J. E., R.A.F.
Radloff, Lt. H., Lond. R. and R.A.F.
West, Sec. Lt. W. G., R.G.A. and R.A.F.
DIED OF WOUNDS.—Bond, Sec. Lt. T. J., R.A.F.
Cannon, Lt. S. L., Shrops L.I. and R.A.F.
Henderson, Lt. T. O., R.A.F.
WOUNDED.—Frost, Sec. Lt. C. S., R.A.F.; Greenyer, Sec. Lt. R., R.A.F.; Hern, Lt. H. R., R.A.F.; Herdus, Sec. Lt. B., R.A.F.; Partridge, Sec Lt. A. A., R.A.F.; Turnbull, Sec. Lt. J., R.A.F.
MISSING.—Bishop, Lt. A. G., R.A.F.; Cooper, Sec Lt. G. W., R.A.F.; Hubbard, Sec. Lt. H. B., R.A.F.; Huycke, Sec. Lt F. A., R.A.F.; Taylor, Lt. E. E., R.A.F.; Usher-Somers, Sec. Lt. C. E., R.A.F.; Watkins, Lt. J. E., R.A.F.
CADETS KILLED.—Bamber, W. K.
Caldwell, E. V. J. D. L.
Doe, J. E. K.
Elliott, C. E.
Frizzelle, N. S.
Harrison, H. R.
McLean, A.
Winstanley, A.

Reported Oct. 7th.

KILLED.—King, Lt. A. J. C., R.A.F.
Moodie, Sec. Lt. H. M., Sea. Highrs. and R.A.F.
Philip, Lt. L. A., R.A.F.
Ravine, Sec. Lt. C. C. G., R.A.F.
Revelle, Sec. Lt. R. C., Oxf. and Buck. L.I., attd. R.A.F.
Robertson, Sec. Lt. A. G., R.A.F.
WOUNDED.—Battle, Sec. Lt. H. F. V., R.A.F.; Boxhall, Sec. Lt. R. A., R.A.F.; Brown, Sec. Lt. W. G., R.A.F.; Dowling, Sec. Lt. F. L. W., R.A.F.; Firby, Lt. G. A., R.A.F.; Hill, Lt. K. S., R.A.F.; Joelson, Lt. S. H., R. Fus. and R.A.F.; Lewis, Lt. T. H., Lanc. Fus. and R.A.F.; Litherland, Sec. Lt. G. T., R.A.F.; Miller, Sec. Lt. L., R.A.F.; Playford, Lt. E. R. B., R.F.A., attd. R.A.F.; Roberts, Sec. Lt. E. L., R.A.F.; Rowe, Sec. Lt. J. J., R.A.F.; Sanderson, Lt. J. I., R.A.F.
MISSING.—Caswell, Lt. G. F. C., R.A.F.; Eaves, Sec. Lt. C. C., R.A.F.; Fowler, Sec. Lt. A. C. G., R.A.F.; Kier, Sec. Lt. J. N., R.A.F.; Larrabee, Lt. E. P., R.A.F.; Mahony, Lt. M. K., R.I.R. and R.A.F.; Milne, Sec. Lt. C. G., R.A.F.; Mill, Sec. Lt. J., R.A.F.; Ware, Lt. D. C., King's (Lpool. R.) and R.A.F.; Yelverton, Sec. Lt. C. N., Hants R. and R.A.F.

Reported Oct. 8th.

KILLED.—Baillie, Sec. Lt. F. W., R.A.F.
Davies, Maj T. L., M.C., R.F.A. and R.A.F.
Dawson, Capt. W. E., R.F.A., T.F., and R.A.F.
Lord, Lt. L. McL., R.A.F.
Scotcher, Capt. W. G., R.A.F.
DIED OF WOUNDS.—Hogan, Sec. Lt. J. W., R.A.F
WOUNDED.—Barber, Sec. Lt. C. W. C., R.A.F.; Brisbane, Lt. J. M., R.A.F.; Engel, Sec Lt. S., R.A.F.; Evans, Lt. L. V., R.A.F.; Faulkner, Sec. Lt. A. A., R.A.F.; Goble, Lt. A. V., R.A.F.; Goodman, Sec. Lt. F. W., R.A.F.; Johnson, Lt. C., R.A.F.; McDonald, Sec. Lt. A. B., R.A.F.; Matthews, Sec. Lt. E. B., R.A.F.; Murton, Sec. Lt. H. A., R.A.F.; Mason, Sec. Lt. H. C., R.A.F.; Peacock, Capt. E. F., R.A.F.; Pyne, Sec. Lt. R., R.A.F.; Tunstall, Sec. Lt. W., R.A.F.
MISSING.—Gunn, Sec. Lt. J. C., High. L.I. and R.A.F.; Fairburn, Sec. Lt. F. E., R.A.F.; Jackson, Sec. Lt. F. N., R.A.F.; McLellan, Sec. Lt. H. L., R.A.F.; Neville, Lt. D. A., R.A.F.; Nicholson, Lt. J., R.A.F.; Page, Lt. D. F. V., R.A.F.; Richardson, Sec. Lt. S. H., R.A.F.; Shanks, Sec. Lt. D. A., R.A.F.; Turnull, Sec. Lt. O. McI., R.A.F.; Wilson, Sec. Lt. B. W., Lond. R., T.F., and R.A.F.

Reported Oct. 9th.

KILLED.—Griffin, Lt. E. W., Glouc. R. and R.A.F
Hepburn, Sec. Lt. R. V., R.A.F
Hodgson, Lt. R. E., R.A.F.
Rogerson, Sec. Lt. G. C., R.A.F.
Tomlin, Sec. Lt. A., R.A.F.
DIED.—Galbraith, Capt. C. F., R.A.F.
WOUNDED.—Ball, Lt. C. R., R.A.F.; Belcher, Sec. Lt. L. C., R.A.F.; Clegg, Lt. E. C., M.C., Wilts R. and R.A.F.; Eteson, Sec. Lt. L., R.A.F.; Harris, Sec. Lt. A. E., R.A.F.; MacKinnon, Sec. Lt. J. M., R.A.F.; Sedore, Lt. F. A., R.A.F.; Staton, Capt. W. E., M.C., R.A.F.; Sharp, Sec. Lt. J. P., R.A.F.
MISSING.—Asbury, Capt. E. D., R.A.F.; Bennett, Lt. H. J., R.A.F.; Browne, Sec. Lt. G. E. M., R.A.F.; Carlin, Capt. S., R.E. and R.A.F.; Conover, Lt. C. C., R.A.F.; Coope, Lt. N. N., L.N.L. and R.A.F.; Dandy, Sec. Lt. J. M., R.A.F.; Davenport, Sec. Lt D., R.A.F.; Gillman, Sec. Lt. B. T., R.A.F.; Harrison, Sec. Lt. W. W., R.A.F.; Heebner, Lt. C., R.A.F.; Hyde, Sec. Lt. A. N., R.A.F.; Mantle, Sec. Lt. H. S., R.A.F.; Newson, Sec. Lt. D. A., R.A.F.; Noel, Lt. H. C., R.A.F.; Pretty, Sec. Lt. H. J., R.A.F.
CORRECTION.—Kidmarsh, Lt J. M., D of Well. R. and R.A.F., should read Tidmarsh, Lt. J. M., D of Well. R. and R.A.F.

CASUALTIES AMONG WT. OS., N.C.OS. AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST

KILLED.

SEPT. 25th.—Bridger P/16300 Serjt.-Mech., E. (Chadwell Heath, Essex); Morrison 10087 Serjt.-Mech., C. S. (Putney); Pye 113523 1st Pte., R. A. (Clayton-le-Moors, nr. Accrington); Thornton 133740 2nd Pte., G. E. (Colne, Lancs.).
SEPT. 28th.—Appleton 193621 2nd Pte., H. J. (Whitstable); Bridge 08868 2nd Pte., W. J. (Coventry); Eley 57100 1st Pte., G. (Hull); Swinscoe 38613 Air Mech., 3rd Cl., J. (Stockton).
SEPT. 29th.—Docherty 143021 2nd Pte., P. (Paisley); Yeates 50185 1st Pte., F. G. (Homerton, London, N.E.).
SEPT. 30th.—Hustwait 28519 1st Pte., E. (Rushden).

DIED.

SEPT. 25th.—Williams 84721 1st Pte., J. C. (Portreath)
SEPT. 28th.—Levene 130431 1st Pte., T. (Birmingham)

DROWNED.

SEPT. 25th.—Foulkes 120907 Air Mech., 3rd Cl., A. W. (Stoke-on-Trent).
SEPT. 28th.—Wilkes 64043, Air Mech., 3rd Cl., C. (Salford, Priors, nr. Evesham).

DIED OF WOUNDS

SEPT. 25th.—Adkin 192624 2nd Pte., W. (Edinburgh); Kimpton 103104 Serjt.-Mech., E. F. (Walthamstow, Essex).
SEPT. 28th.—Banks 36814 Cpl.-Mech., A. C. (Waltham Cross), Emery 18453 Cpl. Mech., T. (Galston); Lovell 46047, Air Mech., 3rd Cl., H. F. (Beckenham).
SEPT. 29th.—Cohen 58523 Air Mech., 3rd Cl., H. (Mile End, E.); King 408731 2nd Pte., A. (Derby).
SEPT. 30th.—Helliwell 62797 Air Mech., 3rd Cl., A. (Batley); Reast 254118 Serjt.-Mech., W. E. (Meads, Eastbourne).
PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.
SEPT. 29th.—Sampson, 406040 Serjt.-Mech. H. J. (Plumstead).

WOUNDED.

SEPT. 25th.—Caldicott 97705 Air Mech., 3rd Cl., R. E. H. (Tideswell); Davies 118478 Air Mech., 3rd Cl., W. T. (Cardiff); Denney 99923 Serjt.-Mech. F. H. J. (Dalston); Goodman 88612 Actg. Serjt. M. J. (Northampton); Grant 8270 Air Mech., 1st Cl., R. (Shepherd's Bush, W.); Hunt 99435 Air Mech., 3rd Cl., D. (Aberdeen); Robinson 43483 Air Mech., 3rd Cl., F. (Leeds); Sampson 406040 Serjt.-Mech. H. J. (Plumstead).
SEPT. 28th.—Baldwin 57200 1st Pte. E. D. (Burscough); Browning 8749 Cpl. G. R. (Brighton); Burt 124480 2nd Pte. O. (Podymore, near Ilchester); Doidge 11555 1st Pte. H. J. (Brenton, near Tavistock); Hourihan 28704 Cpl.-Mech J. (Cork); Jones 207607 Serjt.-Mech. C. J. E. J. (Cardiff); Little 11078 Ch.-Mech. J. R. G. (Hanover Square, London); Murdock 60520 Air Mech., 3rd Cl., J. (Dalmellington); Pickup 3130 Ch.-Mech. W. (Weybridge); Rooke 112453 2nd Pte. F. G. (Peterborough).
SEPT. 29th.—Barnard 94435 Air Mech., 3rd Cl., W. (Plaistow, London, E.); Beveridge 163249 2nd Pte. P. M. (Kirkliston); Blackmore 14162 Serjt.-Mech. A. E. (East Dulwich); Bowler 52874 Serjt.-Mech. J. H. (Holland Park Avenue, London); Isaacs 51089 1st Pte. D. (Houndsditch, E.); Morton 125306 2nd Pte. W. (Gallawgate, near Newcastle); Prince 124207 2nd Pte. S. (Liverpool); Trescothick 4900 Ch.-Mech. S. H. (Hythe); Wade 212715 Serjt.-Mech. D. E. (Wymondham, Norfolk).
SEPT. 30th.—Glazer 43978 Air Mech., 1st Cl., S. (Whitechapel); Goodman 101386 Air Mech., 3rd Cl., B. B. (Northenden); Gould 8544 Air Mech., 1st Cl., F. H. (Portsmouth); Lee 9933) Air Mech., 3rd Cl. A. E. (Wednesbury); Stokes 123674 2nd Pte. E. (Leicester); Thorpe 67755 Air Mech., 3rd Cl., H. J. (Ryde).

MISSING.

SEPT. 25th.—Hammond 121816 Serjt.-Mech. H. J. (Broadstairs, Kent); Harbour 92457 Serjt.-Mech. A. G. T. (Folkestone).
SEPT. 29th.—Bryden 242102 2nd Pte. J. (Dumfries).



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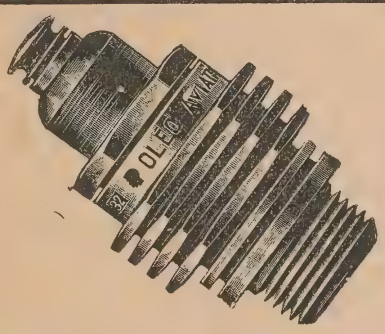
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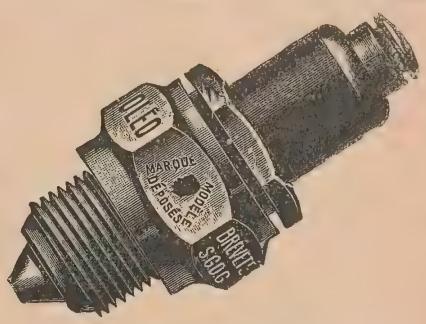
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Sept. 30th.—Smith 103650 Serjt.-Mech W. T., D.C.M., M.M. (Maida Vale, London).

Previously reported Missing, now reported Missing, Believed Prisoners of War.

Sept. 30th.—Davies 114691 1st Pte. A. W. (South Tottenham); Oliver 7655 Serjt.-Mech. S. J. (Buttlands Wells, Norfolk).

PERSONAL NOTICES.

NAVAL.

Engagement.

SPENCER—WIGAN.—The engagement is announced between Lt. R. P. Spencer, R.N.V.R. (Aviation Department, Vickers, Ltd.), eldest son of R.E.E. Spencer, Esq., of Walbottle Hall, Newburn, Northumberland, and Kathleen (Driver, R.A.F.), second daughter of Mr. and Mrs. B. P. Wigan, of Penair, Whitchurch, Glamorgan.

Births.

SHOPPEE.—On Sept. 26th, at Brynmar, Bembridge, Isle of Wight, the wife of Capt. L. C. Shoppee, D.S.C., R.A.F. (late R.N.A.S.), a son.

SIPPE.—On Oct. 2nd, at The Quinta, Birchington, Kent, the wife of Major S. V. Sippe, D.S.O., R.A.F. (late Squadron Commander, R.N.), of a son.

* * *

Naval Promotions.—R.N.R.—Asst. Payr. (Lt., R.A.F.).—C. S. Nunn promoted to Payr., seny. Aug. 27th.

MILITARY.

Deaths.

COBDEN.—Lt. Frank Pargeter Cobden, R.A.F., reported missing after a flight over German territory on July 7th, and now known to have been killed on that date, aged 21, was the youngest son of Mr. H. T. Cobden, of Faringdon, Berks. He was educated at King Alfred's School, Wantage, where he held a scholarship and was a member of the O.T.C. He offered his services in August, 1914, but was placed on the waiting list, and took up an appointment in the National Health Insurance offices at Cardiff. In November, 1914, he was gazetted to a battalion of the Royal Berkshire Regt., but a year later was transferred to the Machine Gun Corps, and went to France in June, 1916. He was promoted lieutenant directly after reaching France, but was wounded in July and sent to hospital in England. He made a good recovery and returned to France in December, 1916. In the following March, whilst playing in a football match behind the lines, he was kicked on the knee. The injury proved serious, and Lt. Cobden spent a long time in hospital in England, and in August, 1917, he had to relinquish his commission, the injury being considered by the authorities as "not due to active service." After a few weeks he applied for and was granted reinstatement as lieutenant. Before the end of 1917 he transferred to the R.F.C., and went to the front last June.

DAUNT.—Lt. C. O'Neill Daunt, South Lancashire Regt., attd. R.A.F., who was killed in action on Sept. 29th, was the younger surviving son of Dr. F. E. H. Daunt, 176, Clapham Road S.W.

FERNALD.—Lt. Van Dyke Fernald, R.A.F., who is now reported as having died as a prisoner in Austrian hands, was born in San Francisco in 1897, and was the son of Mr. Chester Bailey Fernald, the dramatic author. His American ancestry dated from 1630, through a long line of English colonial blood. At the period when America's entry into the war seemed doubtful his protest was to surrender his American nationality in order to enter the British Army. From Trinity College, Oxford, he entered the University Training Corps and was gazetted second lieutenant in the Royal West Surrey Regiment. He was subsequently attached to the R.F.C., qualified as an observer, and saw six months' service on the Western front. He then qualified as a pilot and was sent to Italy. He was last seen on July 23rd over the Austrian front, where, having finished a reconnaissance, it is believed he stayed behind his escort, on the joint initiative of himself and his observer, Lt. Watkins, in the hope of meeting an enemy.

HAMMOND.—Many of the pioneers of aviation and of the later generation of R.F.C. officers and men will regret to learn of the death of Capt. J. J. Hammond, the first New Zealander to become an aviator.

The news was received in the following Reuter telegram:—

Indianapolis, Oct. 3rd.—The funeral service for Capt. Joseph J. Hammond, the New Zealand member of the British Royal Flying Corps who was killed here when the aeroplane he was driving crashed to earth, was attended by thousands of citizens. Speaking at the ceremony, the Bishop of Indianapolis paid a tribute to Capt. Hammond's bravery, and said:—"We bury him not as a stranger, but as one of our own; and by taking part in these services the people of Indianapolis are forging one more link in the chain that is binding closer together the two great branches of the Anglo-Saxon race."

Capt. Hammond's coffin, draped with the British and American flags, was attended by United States and British soldiers including a firing squad of American and British aviation officers. Joe Hammond was one of the great characters of aviation in its early days. He came to England and learned to fly at the Bristol School on Salisbury Plain, where he was the first Bristol pupil to take the Royal Aero Club Certificate, the number of the certificate being 32, and the date thereof Nov. 2nd, 1910, so that he had been flying regularly for nearly eight years. He acted for some time as an instructor for the Bristol Company, and then returned to New Zealand, where he did some violent exhibition flying on a Blériot monoplane presented to the New Zealand Government by the International Correspondence Schools. This was the machine on which the late Mr. Gustav Hamel had flown from Dover to Cologne.

He also acted for some time as an instructor at the Eastbourne Aviation Co.'s School under Mr. F. Bernard Fowler, and there trained some of the most successful of our Service aviators.

On the outbreak of war he joined the R.F.C. and became an instructor. Later on he was seconded for duty as a test-pilot for a well-known firm in the Eastern Counties, and recently he went to America as a demonstrator and instructor.

As a pilot Joe Hammond was at the same time one of the most skilful and of the most reckless. He avoided smashes by sheer cleverness rather than by avoiding risks, so one is quite prepared to hear that he was killed in a perfectly simple and absolutely unavoidable accident, as is generally the case with those who have constantly taken big risks.

He was a big burly fellow, very unlike the popular conception of an aviator, and his high spirits were unextinguishable. Whether on the ground or in the air he was for ever getting into scrapes and getting out of them by his own ready wit. One of his last aerial escapades in England is worth recording.

When flying a huge experimental machine near Lincoln something went seriously wrong, and he was unable to turn, so he endeavoured to glide straight for a field. Finding he was unable to reach his objective he planted the machine skilfully on the capacious roof of a lunatic asylum, where it promptly caught fire. Having no means of putting it out he calmly strolled to the other end of the roof, and sat smoking cigarettes while he watched it burn. The local fire brigade arrived and tried to put it out, and one heard at the time that gallant efforts were made to rescue the supposedly roasting aviator. It was not till he had seen quite a good fire-fighting performance that the said aviator thought it worth while to disclose to the sympathetic crowd that he was still very much alive.

Hammond's sayings and doings, if they could be collected, would make an amusing book, for he had the traditional gift of the early aviators for turning out quaint phrases and he had the true adventurer's spirit. In a certain stolid East-Anglian city he has become almost a legendary hero. All those who knew him will regret the departure of a cheery and very likeable soul from a world which he himself regarded as a very amusing place.—C.G.G.

HODGSON.—Lt. Richard Eveleigh Hodgson, The King's (Liverpool) Regt. and R.A.F., whose death was announced recently, was born on March 12th, 1894, and was educated at St. Christopher's, Eastbourne, and at Sherborne School, entering the School House with a scholarship in 1908. He became head of the school and captain of the cricket XI in 1912-3, and went up to New College, Oxford. In August, 1914, on the outbreak of the war, he obtained a commission in the King's (Liverpool) Regiment, and went to France in May, 1915. After a few months in the trenches, he was sent, owing to ill-health, to a training school abroad. In the spring of 1917 he returned to England for an operation for appendicitis, and after a period of sick leave and light duty joined the R.A.F., obtaining his wings in the spring of this year. He went out again on Aug. 7th, and was killed by gunfire from the ground in his first action over the enemy's trenches. He fell, however, behind our lines, and was buried by his own squadron. He was engaged to Miss Violet Grimley, of St. Crispin's, Sherborne, and was to have been married during his next leave.

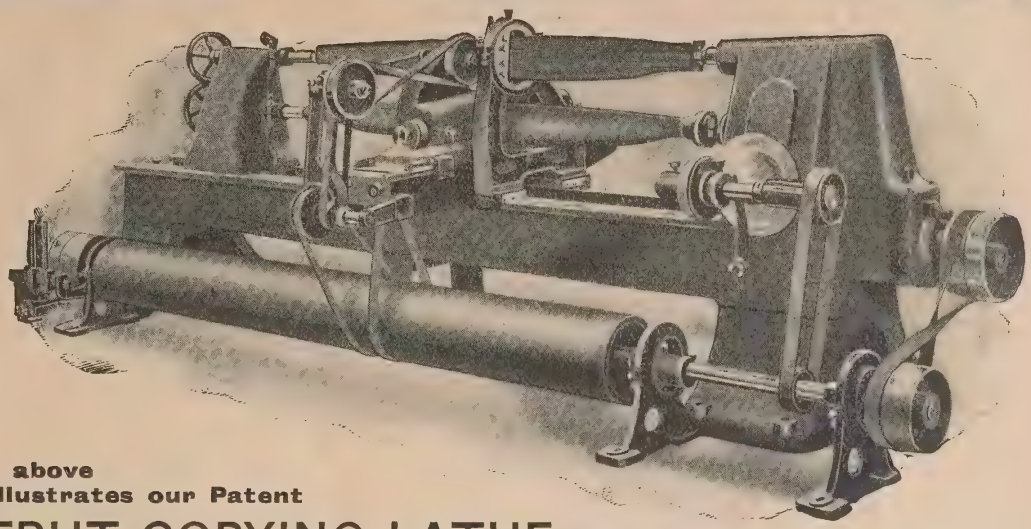
HYDE.—Sec. Lt. Alfred Neal Hyde, R.A.F., who was killed in action on Sept. 21st, aged 19, was the younger son of Mr. and Mrs. Tom Hyde, of Royston, Carlton Road, Whalley Range, Manchester. He was educated at Gresham's School, Holt, Norfolk, and on leaving school he joined the R.A.F. as a Cadet in Augsut, 1917, obtaining his pilot's wings in June, 1918. On July 27th last he went out to the front, where he was posted to a bombing squadron. He met his death during a raid over the enemy lines.

LUCAS.—Lt. Humphrey W. H. Lucas, M.C., R.A.F., who was accidentally killed while flying on Oct. 2nd, was the second son of Mrs. Lucas, The Grove, Coulsdon.

NICHOLLS.—Lt. E. C. H. R. Nicholls, Royal West Surrey Regt., attd. R.A.F., who was killed on active service on Sept. 20th, aged 20, was the only son of Mr. and Mrs. E. F. Nicholls, of Weybourne, Woking. He was educated at Ripley Court, Surrey, Rugby (Mr. H. C. Bradby's House, 1912-15), and Sandhurst. He passed out from Sandhurst into the Royal West Surrey Regiment in July, 1916, but almost immediately was

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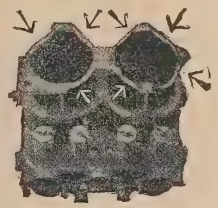
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attached to the Royal Flying Corps. He started flying at Brooklands, and after about eight months at the front was severely wounded in an air fight near Ypres on May 1st, 1917. After convalescence he was employed at the Air Ministry until he started flying again last spring. He was in the Running VIII. at Rugby.

PATCH.—Capt. Henry Patch, S. Lancs., attd. R.F.C., fifth son of the late Revd. H. Patch, died of wounds on or about Oct. 18th, 1917.

WHITEHEAD.—Lt. (actg. Flt. Comdr.), Alfred Gordon Whitehead, West Yorkshire Regt., attd. R.F.C., was reported missing on Jan. 29th, and is now presumed to have been killed. He was the youngest son of Mr. and Mrs. W. A. Whitehead, of Langley, Baildon, Yorkshire, and was 25 years of age. He was educated at Shrewsbury and Caius College, Cambridge. He joined the Army in 1914, and was granted a commission early in 1915. In December, 1916, he was attached to the R.F.C., and promoted to Flt. Comdr. in January, 1918.

WOODHOUSE.—Capt. Lionel Mostyn, M.C., D.F.C., R.A.F., who was killed in action on Sept. 27th, was the eldest son of Mr. and Mrs. Arthur Woodhouse, Tofts, Little Baddow, Essex. He was 21 years of age.

* * *

Lt. E. T. Smart, R.F.C., has been missing since March 27th from the Bray-sur-Somme. Will those writing to prisoners and hospitals, or repatriated prisoners, kindly inquire for him and communicate Mrs. Smart, 20, Manor Grove, Tonbridge.

ENGAGEMENT.

RYGATE—RIDEAL.—A marriage has been arranged, and will shortly take place, between Lt. John Henry Bertram Rygate, Dragoon Guards, attd., R.A.F., only son of Dr. Bertram Rygate, and Mrs. Rygate, of Sizewell, Leiston, Suffolk, and Ione Katharine, only daughter of Dr. Samuel Rideal, J.P., and Mrs. Rideal, of 48a, Cornwall Gardens, South Kensington, and The Chalet, Elstead, Surrey.

MARRIAGES.

COGAN—KERRISON.—On Sept. 28th, 1918, in London, Maj. F. J. L. Cogan, R.A. and R.A.F., eldest son of the late Col. M. Cogan, was married to Elizabeth, widow of Lt.-Col. R. O. Kerrison, Hussars.

GAME—PECKHAM.—On Sept. 30th, at Paddington, Sec. Lt. A. E. Game, London Regt., attd. R.A.F., was married by special licence to Violet Lucy Edith, only daughter of Mrs. E. Peckham, of Bayswater.

MONTAGU—RUMSLEY.—On Sept. 28th, at St. Mary's, Wimbledon, Capt. Ainsley Marshall Rendall Montagu, 1st K.G.O.S. and M., attd. R.A.F., eldest son of A. J. Montagu, Esq., and Mrs. Montagu, of Hillingdon, Surrey, was married to Margaret Violet, younger daughter of E. S. Rumsley, Esq., late P.W.D., India, and Mrs. Rumsley.

BIRTHS.

ANTHONY.—On Sept. 25th, at Sea View Bungalow, Walton-on-the-Naze, the wife (*née* Lloyd) of Capt. Wynnard Anthony, late R.F.C., a son.

MARTIN.—On Oct. 5th, at Ardlethen, West Heath Avenue, Hampstead, the residence of her parents, to Aldis, the wife of Capt. G. Neville Martin, D.L.I., R.A.F., of a son.

McDOWELL.—On Sept. 21st, at "Aldersyde," Cyprus Avenue, Belfast, the wife of Capt. T. Hudson McDowell, R.A. and R.A.F., of a daughter.

* * *

Capt. George Courtenay Dell-Clarke, M.C., R.A.F., deceased, formerly of the Loyal North Lancs.—Anyone having a will or any effects of the deceased please communicate with G. H. Barber and Son, Solicitors, 13, St. Swithin's Lane, London, E.C.

AIR FORCE.

DEATHS.

BARKER.—An inquest was held on Oct. 5th at a Yorkshire aerodrome on Sec. Lt. James Barker, R.A.F., aged 24, a fully qualified pilot. While flying on Oct. 4th his machine came down and caught fire. Several American aviators tried to rescue him, but flames intervened. He had recently returned from overseas. A verdict of accidental death was returned.

CHURCHER and PRESS.—A verdict of accidental death was returned at an inquest held in London on Sept. 26th on the body of Sec. Lt. Albert Emmanuel Collins Churcher, R.A.F., aged 29, of Portsmouth. The evidence showed that a few moments after rising the machine hit the ground heavily owing to the engine failing. Lt. Press, R.A.F., who was acting as pilot, endeavoured to proceed with the flight, and the machine rose some 50ft., but again dived to earth. The pilot was killed instantly, and Mr. Churcher was so severely injured that he died later in hospital.

COLLINGS.—Sec. Lt. Lionel Lapidge Collings, R.A.F., who died on Oct. 3rd at Netley Hospital from illness contracted on active service, was 40 years of age.

EDMONDS.—Sec. Lt. Edward Pell Edmonds, R.A.F., who died in hospital abroad on March 18th, from wounds received in action was the youngest son of Richard Pell Edmonds, of Ripplemead, Cape Province. He was 19 years of age

HITCHIN-KEMP.—Sec. Lt. Reginald Pym Hitchin-Kemp, R.A.F., was killed in a flying accident on Sept. 26th. He was 21 years of age.

KERR.—Capt. David McConnell Kerr, R.A.F., who was lost at sea on Oct. 4th, through enemy action, was the only son of the late David McConnell Kerr, of Jagersfontein, O.R.C., and Mrs. McConnell Kerr, "Coolarty," St. James, C.P., South Africa. He was 28 years of age.

PICKEN.—Lt. Ronald Baynton Picken, R.A.F., who was killed in action on Sept. 6th, was the elder son of Henry Moore Picken, J.P., of Beaumont, Pussellawa, Ceylon. He was 19 years of age.

SPAIN.—Flt. Cadet David Victor Spain, R.A.F., who died of pneumonia at Shorncliffe Military Hospital, on Sept. 28th, was the only son of William Spain, of Johannesburg.

ENGAGEMENT.

GRIFFIN—MANDER.—An engagement is announced between Capt. E. R. M. Griffin, R.A.F., eldest son of Lt.-Col. E. M. Griffin, Bournemouth, and Eileen Cicely, eldest daughter of Capt. and Mrs. J. H. Mander, Thorpe St. Andrew, Norwich, and granddaughter of the late J. P. A. Lloyd-Philipps, of Dale Castle, Pembrokeshire, and Mabws, Cardiganshire.

MARRIAGES.

EMERY—SPRING.—On Sept. 25th, at St. Augustine's Church, Broxbourne, Flt. Cadet William Emery, R.A.F., eldest son of Mr. and Mrs. G. F. Emery, Wormley Lodge, Broxbourne, and grandson of the late Archdeacon Emery, The College, Ely, and of the late J. H. Taylor, Esq., M.A., Little Trinity, Cambridge, was married to Greta, youngest daughter of Mr. and Mrs. E. H. Spring, Ribston Hall, Gloucester, by the Rev. R. Walker, M.A.

HARVIE—ROSE.—On Sept. 28th, by special licence, at St. Luke's Church, Maidenhead, Lt. James Gray Harvie, R.A.F., second son of Dr. J. A. and Mrs. Harvie, Coldwater, Ontario, Canada, was married to Bettina Mercedes, only daughter of Mr. and Mrs. Lewis E. Rose, Sunny Bank, St. Luke's Road, Maidenhead, by the vicar, Rev. C. E. M. Fry.

MAXTON—HOLMES.—On Oct. 1st, at St. Saviour's, Westgate-on-Sea, Capt. Leonard Græme Maxton, R.A.F., only son of James Maxton, Belfast, was married to Ruby Beatrice, only daughter of Dartford Holmes, Huddersfield, and only granddaughter of the late Henry J. Chapman and Mrs. Chapman, The Firs, Westgate-on-Sea, by the Rev. C. Pendock Banks, M.A., Vicar.

PRESCOTT—DUNLOP.—On Oct. 2nd, at Amesbury Parish Church, Lt. Francis Arthur Prescott, R.A.F., youngest son of Cyril A. Prescott, Esq., and Mrs. Prescott, of Highgate, was married to Mary Tempe, elder daughter of Robert Dunlop, District Inspector, Royal Irish Constabulary, and granddaughter of the late Col. S. Dunlop, R.A., C.M.G., 74, Cromwell Avenue, Highgate.

SHINGLETON—BARCHARD.—On Sept. 28th, at St. Mary Abbot's, Kensington, Lt. Frank Shingleton, R.A.F., second son of Mr. and Mrs. Shingleton, 67, Cornwall Gardens, S.W., was married to Leonor Christin, only daughter of Mr. and Mrs. Barchard, Northrepps, Norfolk.

SMAWFIELD—JONES.—On Saturday, 5th inst., H. Norman Smawfield, R.A.F., was married to Sadie, daughter of the late Amos Jones, Swansea.

BIRTHS.

DODDS.—On Sept. 28th, at nursing home, West Malling, to Lt. Gainsford Dodds, R.A.F., Croix de Guerre, and Mrs. Dodds (*née* Beatrice Georgina Johnson), a daughter (Pauline De Vere).

FARNFIELD.—On Sept. 28th, at a nursing home, Whipps Cross, the wife of R. H. Farnfield, Esq., late R.A.F., Sandhurst, and International footballer, of a son.

GODDEN.—On Oct. 3rd, at East Horsley, Surrey, the wife of Capt. Guy L. Godden, R.A.F., a son.

McCONNEL.—On Sept. 27th, at Bexhill-on-Sea, to Capt. Frederic Jordan McConnel, R.A.F., and Grace McConnel, a son.

SAMPSON.—On Sept. 29th, at The Sycamores, North Road, Highgate, N., to Margaret (née Anderson), wife of Lt. H. P. Sampson, R.A.F.—a son.

* * *

Capt. Kenneth Charles Mills, R.A.F., was reported missing on Aug. 8th. Will those writing prisoners of war, or hospitals in Germany, kindly inquire for him and communicate with C. Mills, 31, Campden House Road, W.8.?

* * *

Lt. C. B. E. Lloyd, R.A.F., youngest son of the late Mr. W. Ellis Lloyd and Mrs. Allen, formerly of Barnet Green, now of Ashton House, Wolverhampton, is reported missing.

* * *

Lt. P. M. Dennett, R.A.F., has been missing since June 2nd. He was flying on the Western Front. Will those writing to

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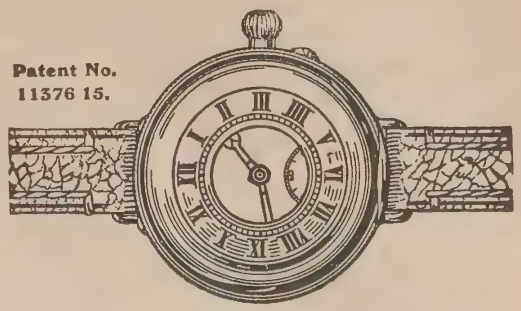
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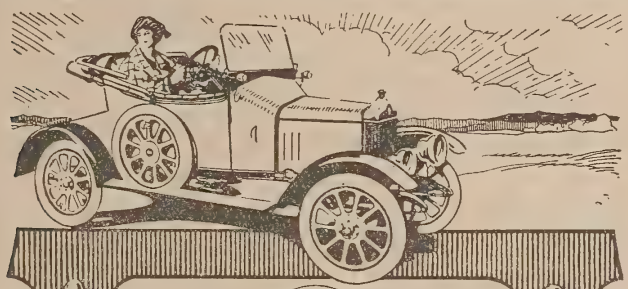
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FOREIGN COMMUNIQUES.

FRANCE.

Oct. 2nd.—During the day of Oct. 1st the hazy weather hampered the work of our aviators, but the few hours of clear weather were availed of by our crews. Fourteen enemy aeroplanes were brought down or put out of action, and two balloons were set on fire. Our observers made numerous reconnaissances, and the bombers dropped during the day 27 tons of projectiles, and fired thousands of cartridges into enemy concentrations and convoys behind the battle front.

During the night of Sept. 30th eight tons of projectiles, and during the night of Oct. 1st over 27 tons were dropped on the big stations of Longuyon, Conflans, Dommary, Barencourt, Maison Bleue, Le Chatelet, Montcernet, and Laon, and the railway lines and bivouacs in the region of Laon.

Capt. Arguess, on Sept. 27th, brought down an enemy aeroplane and two on the following day, which brings the number of his victories to 12. Sous-Lt. Waddington, by bringing down an enemy aeroplane on Sept. 29th, brought the number of his victories to 10 (five balloons and five aeroplanes).

Oct. 4th.—The favourable atmospheric conditions enabled the Air Service to effect on Oct. 3rd important work. Nineteen enemy machines were brought down or were seen to fall out of control, and three balloons were set on fire. The observation Air Service has not ceased to inform the Command by means of its reconnaissances, of which several were pushed very far into the enemy's lines. Further at very many points the range was given to the artillery against enemy troops and batteries. Our bombers dropped during the daytime 50,700 kilogrammes (about 51 tons) of projectiles and fired several thousands of cartridges on enemy reserves which were massing with a view to launching a counter-attack in the region of St. Pierre-à-Arnes, Machault Semide, and Contreuve.

The reprovisioning of certain advanced elements was effected as on previous days by air machines. Over five tons of foodstuffs and cartridges were sent to our troops by this means.

During the night the bombing branch of the Air Service dropped 29 tons of projectiles, and copiously sprinkled bivouacs and cantonments in the region of Lens and the valley of the Suippe and the railway stations of Longuyon and Chatelet-sur-Retourne, Vouziers, Warmeriville, Maison Bleue, Laon, and Marle.

Oct. 5th.—In spite of low clouds and mist numerous reconnaissances have enabled us closely to watch the movements of the enemy. Four German machines were brought down and a captive balloon set on fire in the course of the day.

Flying at a very low altitude, our bombers attacked with bombs and machine-gun fire enemy troops and convoys in the battle zone, and thus used 20 tons of projectiles. During the night over 13 tons of bombs were dropped on the railway stations of Laon, Mont Cornet, Maison Bleue, Le Chatelet, Mt. St. Rémy, and Juniville, where large fires broke out.

On Sept. 26th Lt. Daladier brought down an enemy machine and set fire to a captive balloon, the 10th and 11th successes respectively of this pilot.

Oct. 6th.—On Oct. 4th, although the atmospheric conditions were again very unfavourable, our bombers dropped 13½ tons of projectiles on enemy concentrations of troops, convoys, and batteries, the last of which were obliged to cease fire.

During the night only a few aeroplanes were able to carry on operations, on account of the bad visibility. Eighteen tons of projectiles were dropped on the stations of Le Châtelet-sur-Retourne and Neuflize, and conflagrations caused.

During the daytime on the 4th, 21 enemy aeroplanes were destroyed or driven down out of control.

Oct. 7th.—On Oct. 6th the bad weather considerably hindered our aerial operations, and prevented our bombers carrying out any work. Nine enemy aeroplanes were nevertheless shot down or driven down out of control.

ITALY.

Oct. 3rd.—British aeroplanes effectively bombarded the lines of communication along the Skri and the Skumbi, and, flying low, attacked with machine-gun fire the aviation ground of the Tirana. They brought down a hostile chasing plane in air fighting.

Oct. 4th.—Reciprocal and considerable aerial activity. Three hostile planes were brought down in air fighting.

Oct. 5th.—Aerial activity was intense during the last 24 hours. Aeroplanes and airships effectively bombarded vital centres of the enemy and one of his aviation camps. During numerous air combats four hostile planes were brought down.

Oct. 6th.—Our own and allied aviators were very active. Hostile flights were faced and driven back in combats over Val Lagarina and Susegana (Piave). An enemy plane was seen falling out of control. The aviation camp at Egna (Upper Adige) was bombarded with incendiary bombs. The destruction of huts, hangars, and three machines was ascertained. Effective bombing of the enemy's lines of communication was carried out on the Asiago Plateau.

Oct. 7th.—Last night our airships bombed with very effective results the aviation camps in the Venetian Plain and military objectives at Primolano (Sugana Valley) and at Fucine (Sole Valley). Two hostile aeroplanes were brought down in air fighting.

GERMANY.

Oct. 2nd.—Yesterday we shot down 27 enemy aeroplanes and three captive balloons. Capt. von Schleich obtained his 35th aerial victory and Serjt. Mai his 30th.

Oct. 5th.—During the last two days we shot down 65 enemy aeroplanes. Lt. Baumer won his 40th and 41st aerial victories.

Oct. 6th.—Yesterday we shot down 37 enemy aeroplanes and two captive balloons.

AUSTRIA.

Oct. 6th.—Near Neumarkt, in the Southern Tirol, as the result of an Italian aerial attack on a war prisoners' camp, numerous Italian war prisoners were killed and wounded.

BELGIUM.

Sept. 27th.—Two enemy balloons have been brought down by our aviators, one of which was brought down by Lt. Coppens. This is his 31st victory.

Oct. 1st.—In spite of the activity of the enemy's aviation, Allied aeroplanes have retained the mastery of the air. British aeroplane squadrons, in particular, have bombed Lichtervelde (north of Roulers) in broad

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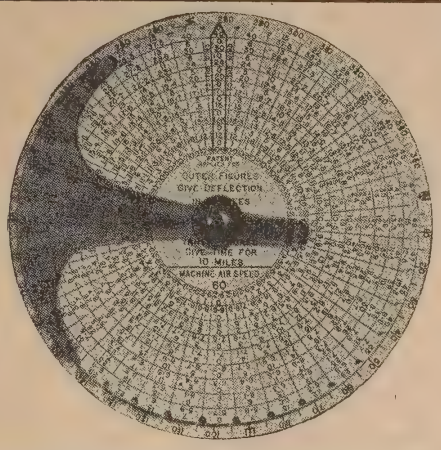
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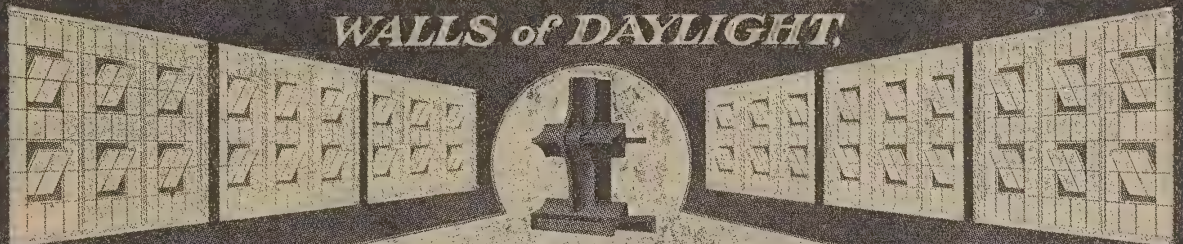
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daylight, and caused a fire at the railway station. Several convoys have also been dispersed by bombs or machine-guns.

Oct. 1st.—In spite of the unfavourable weather, the Belgian and Allied aviators have not ceased to participate energetically in the operations, machine-gunning the enemy troops and bombarding his communications, and co-operating in the work of our infantry and our artillery On Sept. 29th our aviators brought down two enemy balloons in flames

Oct. 2nd.—British aviators have destroyed nine enemy machines and two captive balloons.

Oct. 3rd.—Four German machines were brought down by British aviators, and one captive balloon was set on fire by Lt. Coppens, of the Belgian Air Service, who has thus achieved his 33rd victory

Oct. 5th.—Our aviators, as well as British squadrons, were active. Over 10 tons of bombs were dropped on enemy railway stations, organisations, and aerodromes, especially at Ardoye, Deynze, Melle St Denis Westrem, Thourout, Lichtervelde, and Zeebrugge.

Ten enemy machines have been brought down. Lt. Coppens achieved his 34th and 35th victories in bringing down two captive balloons, and Sub-Lt. Meulemeester his 11th success in the destruction of another enemy balloon.

Oct. 7th.—Our aeroplanes bombarded enemy cantonments at Westende and Middelkerke. Two enemy aeroplanes were brought down between Dixmude and Houthulst—one by our motor-guns and the other by our aviators.

U.S.A.

Oct. 1st.—Since Sept. 26th our aviators have shot down more than 100 hostile aeroplanes and 21 balloons.

TURKEY.

Sept. 30th.—Near Rayak we brought down an enemy aeroplane, the occupants of which were made prisoners.

COMPARATIVE LOSSES.

The "Times" of Oct. 2nd publishes the following résumé of the work of the R.A.F. :—

Eleven hundred and forty-two aeroplanes were reported down during September on all the battle fronts, in air raids into Germany, and in raids and offensive patrols carried out by Royal Air Force contingents working with the Navy. In addition, the record number of 171 observation balloons were reported destroyed. The aeroplane total for last month compares with—Aug., 1,309; May, 1,248; June, 1,235; and July, 1,179. Of the total of 1,142, the Allies claim 902 and the Germans 240.

British aviators and gunners destroyed 383 German aeroplanes and 62 balloons, and drove down 199 out of control. Against this total of 582 the British machines reported missing numbered 297. These figures may be subdivided:—Battle front: 332 destroyed, 159 driven down out of control—total, 491; missing, 235. Independent Force: 10 destroyed, 10 driven down out of control—total, 20; missing, 37; naval aviators: 41 destroyed, 30 driven down out of control—total, 71; missing, 25

The French destroyed or put out of action 181 German aeroplanes and destroyed 57 balloons; British and Italians in Italy destroyed or forced to land 33 enemy machines; British aviators in the Balkans crashed five; the Americans destroyed over 100 (the official phrase) and 21 balloons; and the Belgians one.

HELPING THE TROOPS.

"Our Day" at Wolverhampton was celebrated by a pageant to which the Sunbeam Motor Car Co., Ltd., ably contributed. The Sunbeam procession comprised nine tableaux, some by the management, others by special departments. The workers in the tableaux marched in their overalls, and carried banners containing optimistic phrases. A biplane and a row of now obsolete Sunbeam-Coatalen aircraft engines were included in the procession.—R. M.

THE "OLYMPIAN."

For the benefit of the Flying Services Fund the editor of the "Olympian," the works magazine of the Blackburn Aeroplane and Motor Co., Ltd., has started a branch fund at the works, and is also selling some large prints on art paper of two pictures of air-fighting for the same benefit. It is hoped that the workers will respond to this deserving fund's appeal.

Another fund worthy of the workers' patronage is the R.A.F. Prisoners of War, and one notices with pleasure that the editor

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of the "Olympian" is devoting a deal of space to the advertising of this deserving charity.

The September edition of this magazine contains, amongst a varied number of articles, an account of the work of a "Blimp," by "Wing Adjutant," which is interesting.

The amusing toilet hints for men and the "Lady's Corner," describing all sorts of things, from how to cure squeaking shoes to how to make home-made Candied-Peel, all help to make a very good threepennyworth. —R. M.

WEEKLY STOCK LISTS.

Brown Bros., Ltd., 22 to 34, Great Eastern Street, London, E.C.2, are issuing bi-weekly lists of fittings actually in stock at the time of posting. Immediate delivery can be obtained of goods included in these lists.

Bona-fide buyers of aircraft fittings should, therefore, write immediately for their names to be included as regular recipients of catalogues.

ROBINSON AND CLEAVER'S SALE.

Robinson and Cleaver, Ltd., of Regent Street W.1., are holding a sale of Irish linen and men's wear from Sept. 30th to Oct. 12th. They take the opportunity to warn their clients that owing to the shortage of flax and the increasing demands of the Government for aeroplane fabric, the prices of linen will be considerably advanced in the near future. It is, therefore, advisable for those who are in need of anything advertised in the sale catalogue to lose no time in procuring the same.

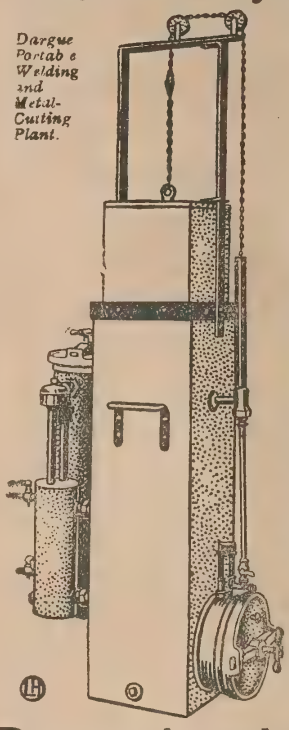
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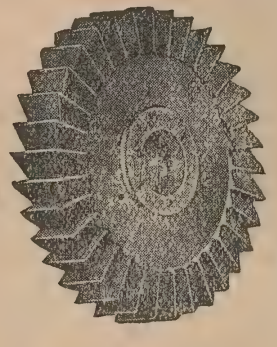
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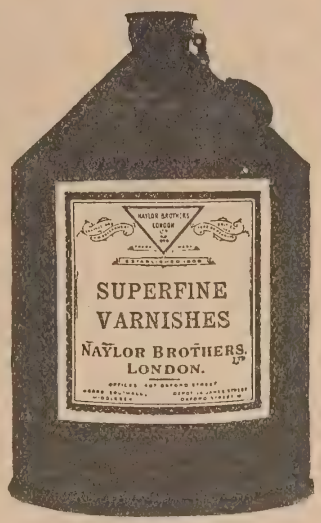
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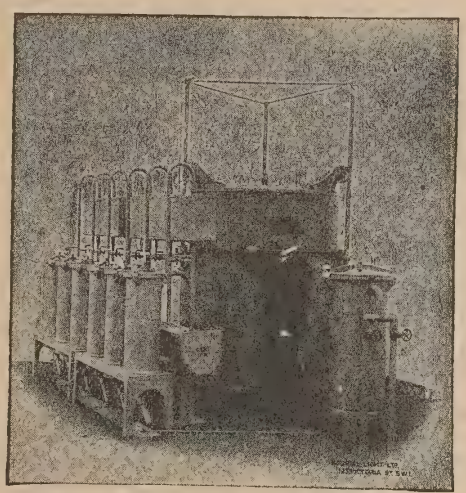
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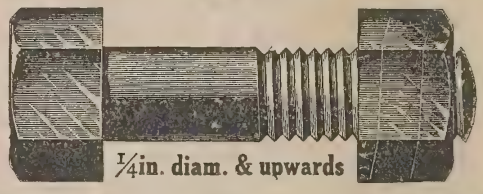
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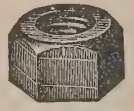
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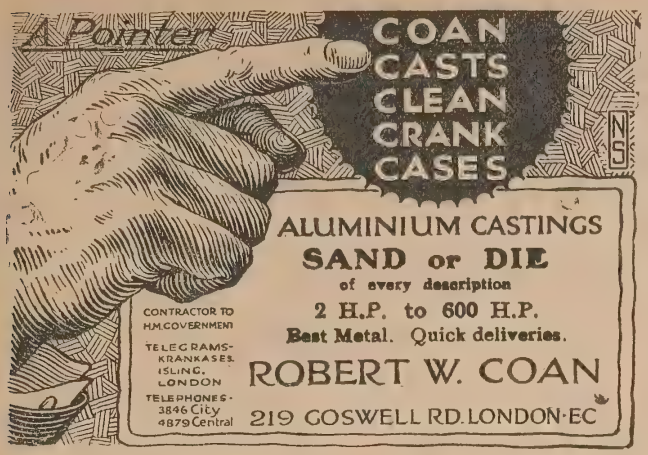
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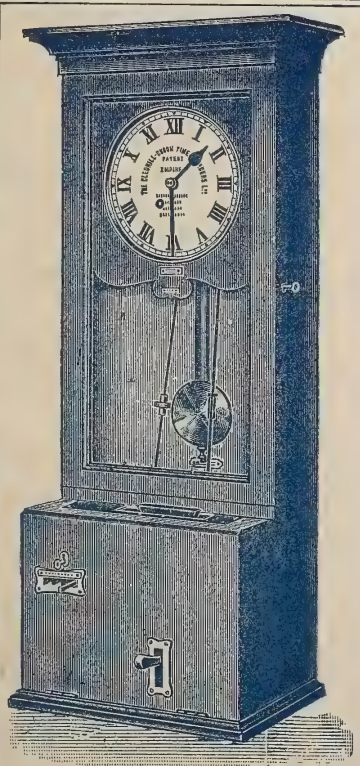
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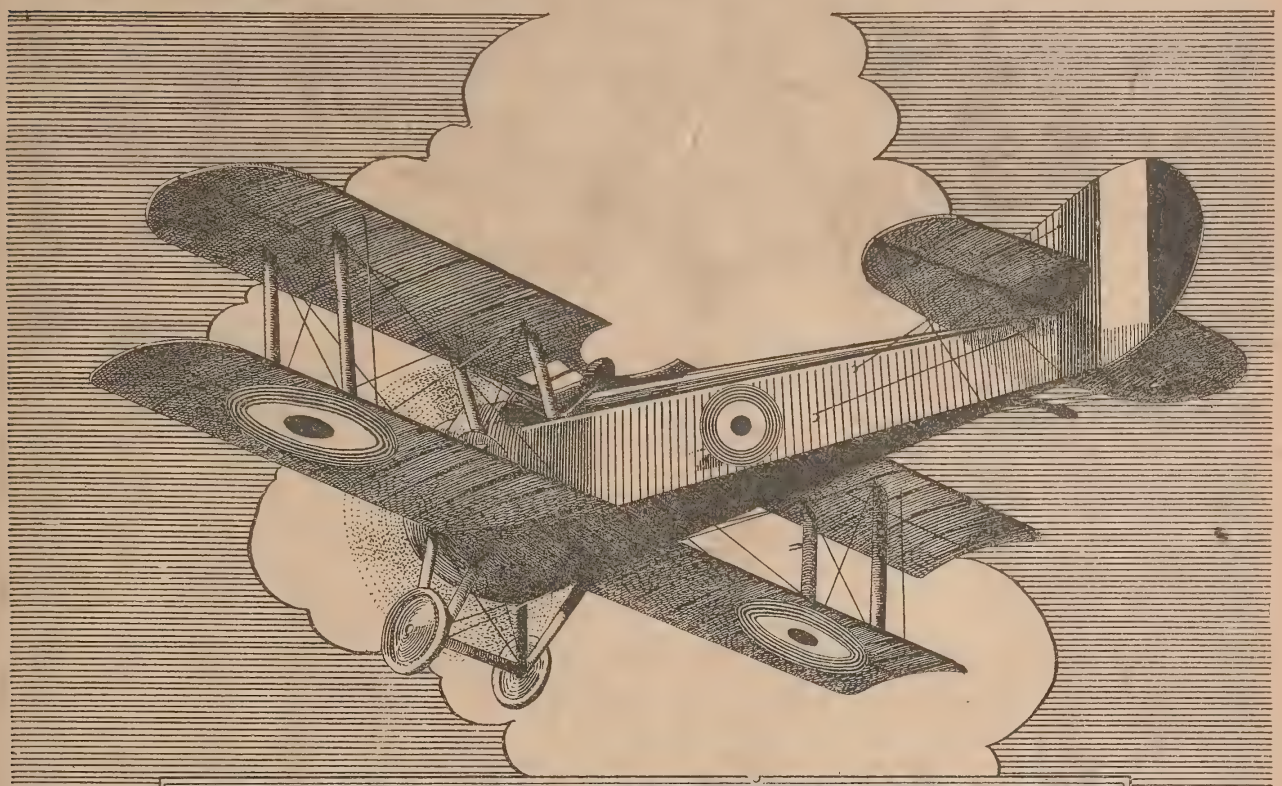
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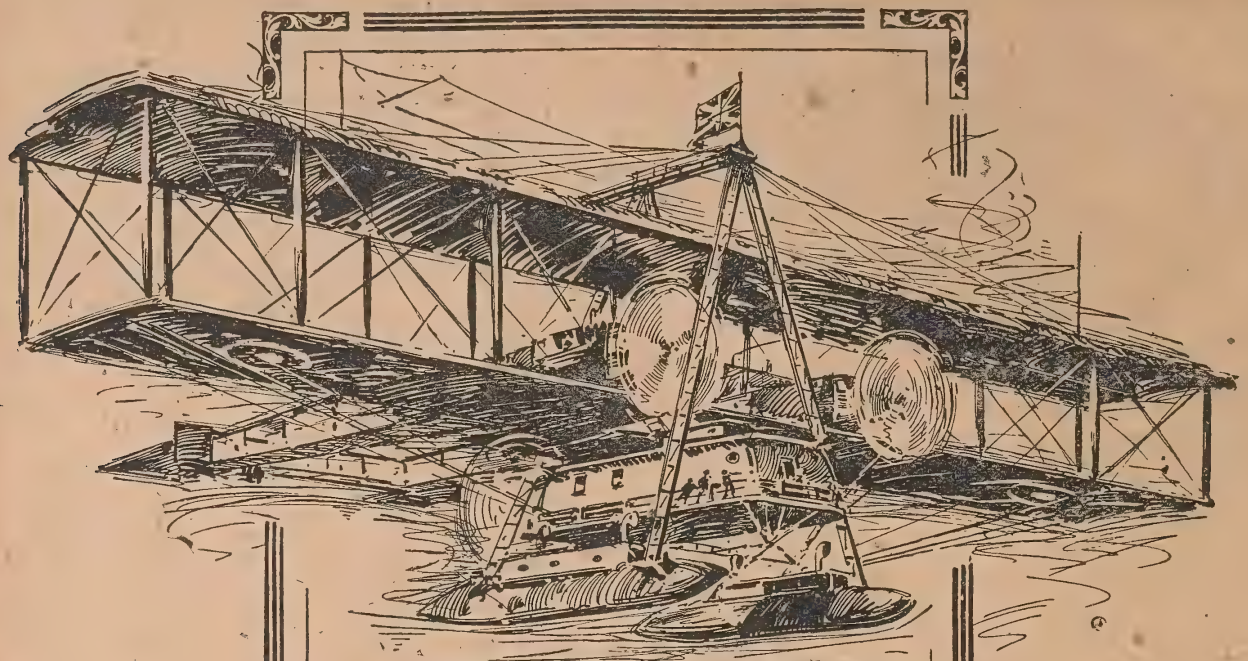
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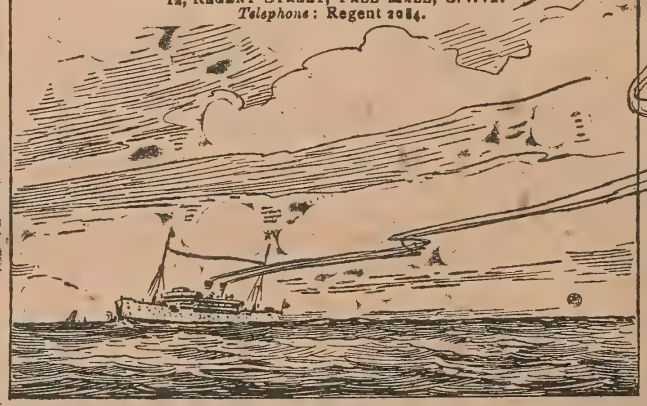
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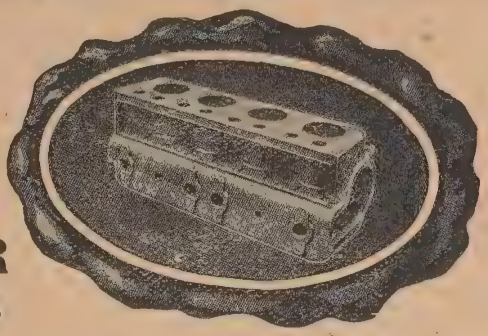
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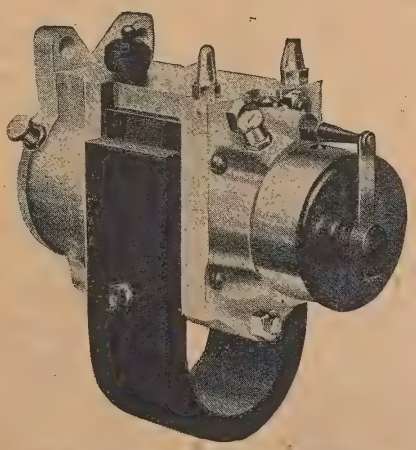
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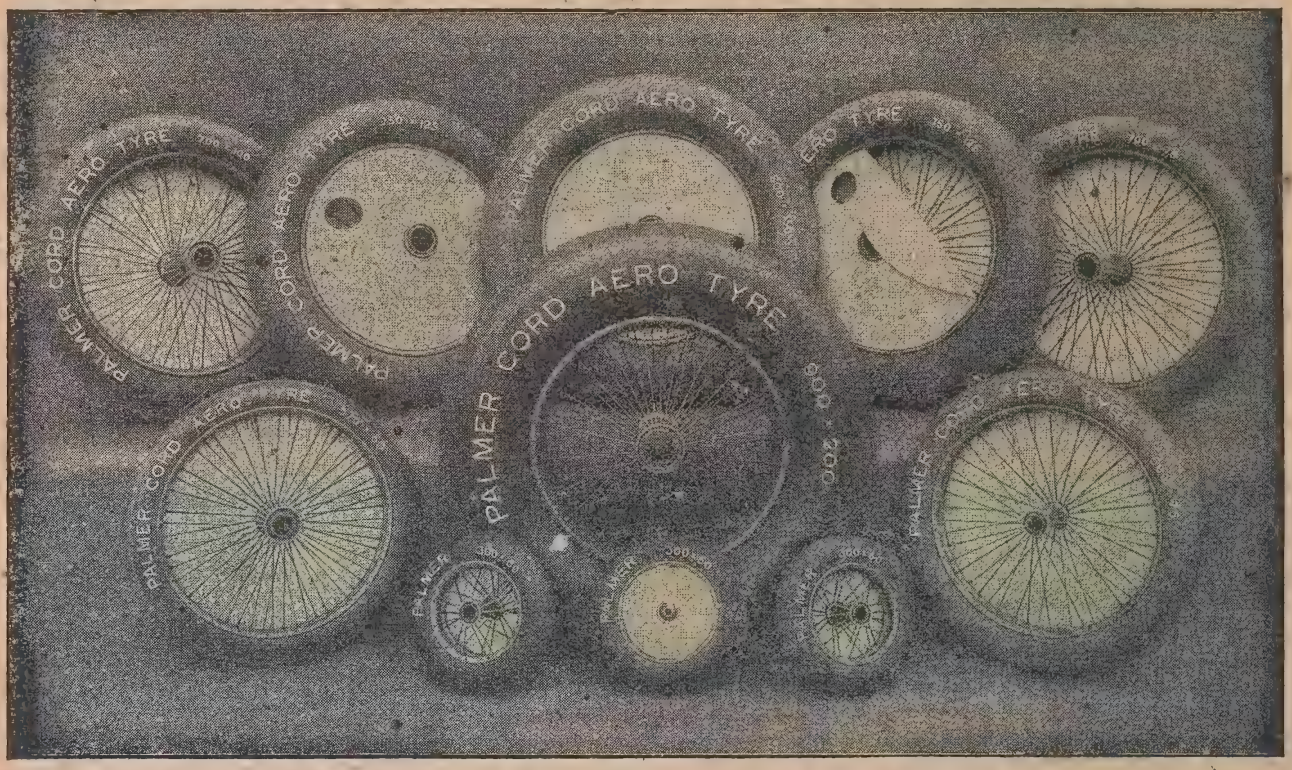
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300×60	16	111.12	25.4	Central	700×100	33	150.	38.09	Central	800×150	†41	185.	55.	Central
,,	17	72.39	12.7	Central	,,	77	178.	44.45	132/46	,,	82	185.	55.	135/50
450×60	30	89.	31.75	Central	,,	92	185.	55.	135/50	,,	85	185.	55.	Central
575×62	21	160.	28.	Central	,,	95	185.	55.	Central	,,	106	185.	47.62	135/50
,,	34	150.	31.75	104 46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Central
,,	111	150.	38.09	104/46	,,	99	178.	38.89	132/46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132 46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
,,	79	178.	44.45	Central	650×125	119	178.	55.	132/46	,,	201	185.	60.32	125 60
,,	100	178.	38.09	132 46	750×125	33	150.	38.09	Central	900×200	107	185.	55.	Central
,,	101	178.	31.75	132 46	,,	77	178.	44.45	132/46	,,	108	185.	55.	125 60
600×75	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	120	185.	66.67	125 60
,,	34	150.	31.75	104 46	,,	95	185.	55.	Central	,,	202	185.	60.32	Central
,,	111	150.	38.09	104 46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125 60
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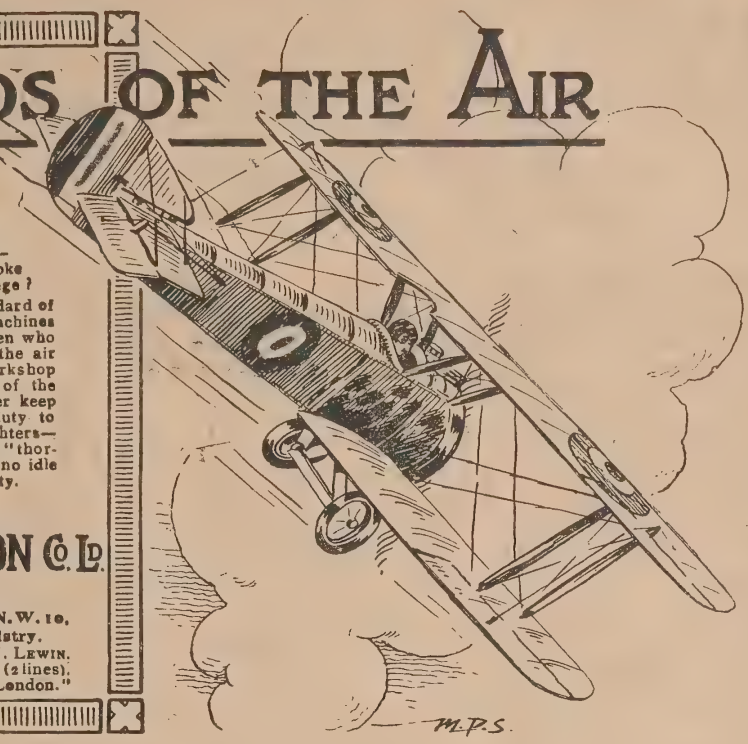
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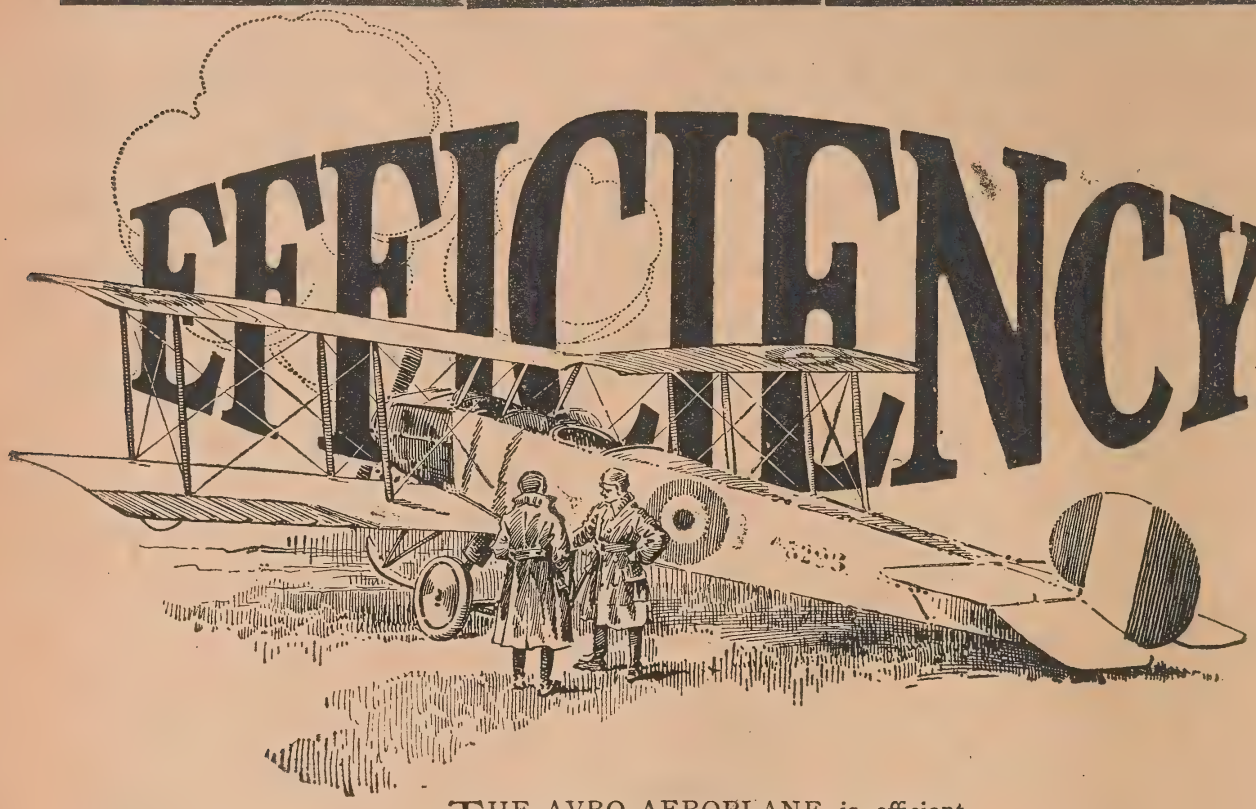
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ON IMPROVING OUR AIRCRAFT.

When the Air Ministry came into being, in response to the misguided though perfectly honest and well-meaning agitation of the Parliamentary Air Committee, we were told that the amalgamation of the Flying Services and the unification of supply would increase efficiency, so that we should have better pilots and more of them, and better aeroplanes and more of them. The scandals of the R.N.A.S. and of the R.F.C., both as regards personnel and matériel, against which the agitation was directed, were supposed to be due to jealousy between the two Services, and to lack of one central control of the whole thing.

We have now had just over nine months of this much-vaunted central control, and one has no hesitation in saying that, taking it all round, it is not the success which the agitators expected. This is not because of any particular individual, but because of the mere fact that it *is* a unified central control. If anyone less able, less honest, and less energetic than Lord Weir had been Air Minister, we should almost certainly have had a disastrous year in aerial affairs. The dominance of the Royal Air Force throughout 1918 has been due to the excellent work of Sir William Weir during 1917, as Controller of Aeronautical Supplies under the Air Board of which Lord Cowdray was President, and as Master-General of Aircraft Production during the early months of 1918.

When the Air Force Bill was before Parliament, one pointed out that the unification of the R.N.A.S. and R.F.C. would kill that healthy rivalry and keen competition which had brought both Services to such a high pitch of excellence during 1917. Thanks to the splendid leadership of General Salmond as G.O.C., R.A.F. in the Field, and of General Trenchard as G.O.C. Independent Force, R.A.F., there has been no falling off in the *moral* of the R.A.F. on active service, and, because nothing succeeds like success, the R.A.F. people have "their tails well up" to-day just as they had when General Salmond sent that historic message.

Also, the supplies of aircraft have been steadily increased during 1918, thanks to the solid work of numerous hard-working officers at home who have not yet been given public acknowledgment. They have kept plodding along steadily in the way set for them by Sir William Weir in 1917, and they have been ably supported in their efforts by the heads of the various aircraft firms, so that, in spite of strikes, and errors in the supply of raw material, we have more aeroplanes in being to-day than we can possibly use.

But, even admitting all this progress, the question arises as to whether we have gone ahead as quickly as we might have done. Setting aside altogether for the time being the question of personnel, are our aeroplanes now on active service as far ahead of the enemy's machines as they might be?

Odious Comparisons.

It is not good enough for our official apologists to say, as they can say quite truthfully, that the enemy's best machines are no better than our best. One admits freely that the enemy's two-seaters, such as the Halberstadts, Hannovers, Rumplers, L.V.Gs., and D.F.Ws. are no better than our Bristols and de Havillands, and that his Fokkers, and Pfalzes, and Rolands are no better than our S.Es. and Camels. One goes further, and asserts that on the average the enemy machines are inferior to the corresponding types used by the R.A.F. But, if our manufacturers and designers can do better still, are we justified in retaining old types of machines in service abroad as long as we do, and are we justified in keeping new and vastly improved types out of production during that period?

What the Enemy Knows.

So that one may be sure of not saying anything which can convey information to the enemy, let us look at the thing from the enemy's point of view. Has the enemy seen up to this present date a single squadron of British machines of a type which he had not seen before Christmas of 1917? Even admitting that some of the types have been improved so that they now put up a somewhat better performance, have we, to use an expressive vulgarism, "put it across" the enemy by springing on him whole squadrons of any new and surprisingly effective type? The enemy knows a great deal better than do the majority of people in this country that the answer is in the negative.

There can be only two explanations of such a state of affairs. Either our designers have run dry of ideas, or our official people in the Production Department are slow in comprehending the value of new and improved designs and have caused unnecessary delay in putting these new designs into production. Everyone knows that there are plenty of new designs, and of actual experimental machines, in existence, which are better than anything at present in service. Therefore the obvious inference is that officialdom, as usual, is to blame for the absence of new types on active service.

The equally obvious inference is that, because of the unified control of design and production, there is no spur of rivalry or competition which can force our officials to speed up their work. When the R.N.A.S. had one design department and the R.F.C. had another, then each department worked its hardest to get its latest type out before it could be beaten by a corresponding type produced by the rival department.

As It Was.

Even when supplies were unified under the Air Board, each Service had its own design departments, so that the designs of rival manufacturers received double con-

sideration, and, when a design was accepted, its production was accelerated by the anxiety of the design department of that particular Service to get it out before its rival. The result was entirely healthy for both Services, and had, in fact, a double benefit, for when one Service happened to be badly let down by its technical "experts" it could always borrow engines or aeroplanes from its friendly rival, for it so happened that never did the two sets of experts contrive to make fools of themselves at the same time.

To-day we are depending entirely on one technical department, which, however well-meaning and honest it may be, is liable to human errors. In fact, the better it may mean and the more honest it may be the greater is the chance of its blocking progress, for it must desire above all things to avoid making mistakes, knowing that a serious technical mistake would mean disaster to the R.A.F. Therefore it cannot afford to take risks, and must play for safety by sticking to good old proven rules.

It is exactly like feeding an army along a single line of railway. In such a case the trains must run dead slow because an accident would block all supplies and possibly lead to the defeat of the army. With two lines it is possible to run faster and get supplies up quicker. And with three lines one would be justified in taking sporting risks.

A Necessary Trinity.

If the Royal Air Force were split into three distinct branches, the R.N.A.F., the R.F.C., and the Independent Force, each with its own technical department, we should do vastly better, for each would be trying its own experiments and ordering its own types, even though actual supplies were controlled by a Production Department whose duty it would be to co-ordinate the demands of the three branches, and allocate material, labour, and factory accommodation.

Such an arrangement would not in the least diminish the quantity of machines or engines produced, so long as production was properly allocated. A factory which is manufacturing a given type of complete machine cannot produce more than a certain number, and if twenty factories are producing complete machines to their maximum capacity it does not matter whether they are all producing one type or whether five are making one type, five another type, and ten yet another type.

For example, if ten factories were making, say, Camels, they would turn out just as many machines if five were making Camels and two were making Dromedaries, and two were making Cormorants, and one were making Chickens, provided that the number of man-hours necessary to make a Camel were the same as that needed to make a Dromedary or a Cormorant or a Chicken. And if the Cormorant turned out to be a "dud," there would still be eight factories making good serviceable machines.

Where the Production Department would be most use would be in co-ordinating the work of the small firms which supply the "complete machine" firms with parts and supply the Services with spares. There would be plenty of work in this direction without cutting down the number of types in production to dangerously low limits. We have seen the way in which the Germans have landed themselves high and dry by over-standardisation. As a result, they now have three or four types of engines, all of which are beaten by the Allies' engines. It is up to our Production Department to avoid landing us in a similar hole by cutting down the number of types of our engines and aeroplanes, not only those in production, but those built experimentally.

Killing Experiments.

Some time ago an order was published in the daily press prohibiting the construction of experimental aeroplanes and engines without a permit. The order was good in theory, for it prevented people from wasting money and labour and material in freak experiments. In practice it is not so good, because, owing to our foolish system of unified control, if the applicant for a permit fails to convince the particular sub-department with which he has to deal that his design is good, he fails to get a permit.

Under the existing system everything depends on one single line. A clever talker, or a pleasing personality, or an able bluffer, may get away with it—as the Americans say—and procure a permit for a quite good but actually an entirely unnecessary engine or aeroplane, whereas a much better thing may be refused a permit because the applicant fails to be popular personally, and he may never come in contact with the responsible head of the department because he has failed to penetrate the outer defences of minor officials.

The system is wrong in itself, but it is made worse by the fact that, in an entirely praiseworthy effort to effect economies, it is made very hard for any other than the old and proved designers to get experimental permits. The favourite arguments seem to be that the building of an experimental machine will interfere with the output of a factory, and that as the war cannot last much longer output is more important than new designs, or alternately that as the war may last indefinitely it is impossible to spare labour and material for experiments.

Pure Fallacies.

Both arguments are equally fallacious. In the first place, if the war cannot last much longer, that is an excellent reason for granting permits more freely. We have vast quantities of standard type aeroplanes in stock and these will be no use after the war, except for practice work in the R.A.F. On the other hand, if the British Aircraft Industry is to go out and capture foreign trade after the war—against the keen competition of our Allies and enemies alike—it is of vital importance that we should have new types of machines ready to offer future customers.

As that eminently sane writer "Medway" pointed out in "Commercial Aeronautics" a week or two ago, if the motor trade can have permits to build experimental post-war pleasure cars, surely it is equally important that the Aircraft Industry should have permits to build experimental post-war commercial aeroplanes. One goes further and states definitely that as our future existence as a nation will depend primarily on our Air Force, it is a vital necessity that our aircraft firms should be permitted now to prepare for making a living after the war.

A Long War.

Secondly, if it is assumed officially that the war is going to last indefinitely, then we shall want many more new aeroplanes. The war may well do so if the German armies retire safely behind the Rhine and if the German people settle down to keep the invading hoof out of the Vaterland—which seems to be the policy of the German High Command, judging by the burning of French cities and the torpedoing of mail-boats full of civilian passengers. Such acts appear to be carefully calculated to force the Allies to refuse negotiations for peace and to insist on the complete defeat of Germany, whereas the German "peace offers" are calculated to make the German people believe that it is the Allies who refuse peace, and that the only way to preserve themselves from murder, rapine, and pillage is for the German people to support the Junkers and financiers in carrying on the war till the Allies collapse through exhaustion caused by hammering at Germany's "sure shield."

That being so, we may look forward to another two or three, or even more, years of war. And because it will be so hard to force the line of the Rhine there will be the greater need for newer and better aeroplanes and engines, with which to carry the war across the Rhine over the German armies and into the heart of Germany.

Which is the best possible reason in the world for granting experimental permits freely, but judiciously, to any firm which seems capable of doing useful work. It is well to remember that there are as good fish in the sea as ever came out of it, and that there are as good—or perhaps better—designers in the Aircraft Industry as —or than—have yet been discovered. Therefore it is the duty of the Production Department to encourage experimental designs. It is a very evil thing to discourage them by making it difficult to obtain permits.

The Cost of Experiments.

The cost of experiments is vastly over-rated. Take for example the building of a single-seater or two-seater fighter of ordinary standard size. Long ago, before factory organisation, or aircraft machinery, was nearly as good as it is now, it was reckoned that an ordinary two-seater cost 4,000 man-hours to build. One may therefore reckon that as a liberal estimate for the cost of building an experimental machine of moderate size—excluding multiple-engined bombers, big flying-boats, and such things.

Now 4,000 man-hours represents one day's work in a factory employing 400 hands and working 10 hours a day. If the owner or manager of such a factory chose to give all his hands a holiday for a day, and take them for a picnic up the river, officialdom would pat him on the back for being so considerate to his employees. But, if the same man wants to use up the same amount of labour, plus the cost of material, and proposes to pay for the lot out of his own pocket, in the endeavour to produce a machine which will help to stop the war, or will help to pay for the war "when the cataclysm of a devastating peace bursts upon us," then he has to argue and plead and cajole and waste his own time and that of a whole lot of official people before he can get permission to do so, and anyhow the odds are pretty heavy against his getting permission.

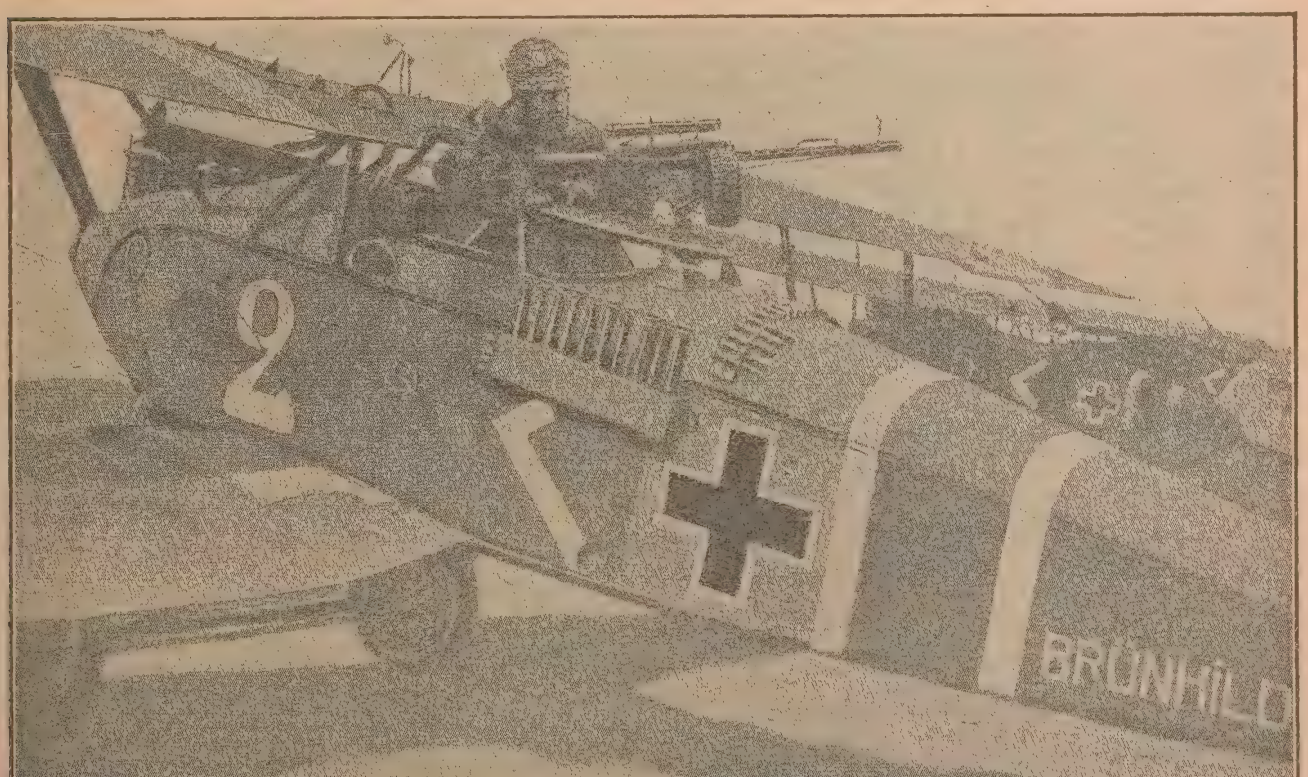
Moreover, experimental machines of high value have frequently been built out of A.I.D. rejects, so that actually labour and material which would otherwise be officially wasted can be usefully employed. Special consideration should be given to applications which embody the proposal to use such material.

The whole question of this unified and centralised control deserves the close personal attention of our able and far-seeing Air Minister, and one sincerely hopes that in due course he will reorganise the whole Air Force into those three branches—*tria juncta in uno*—which alone can lead to the highest efficiency and effectiveness—unless the Admiralty and War Office decide ultimately to break away and establish their own Flying Services again. But in the meantime the Production Department and its variously assorted subordinate technical departments can do a great deal to improve matters by making it easier for new and enterprising designers to produce new and improved types of everything used in aerial warfare.—C. G. G.

ON SOME MORE WRAF WRANGLING.

It seems that we have by no means heard the last of the Wraf Wrangle, for it is said that at least one Member of Parliament—and an honest one at that—is to raise the question of the treatment of the candidates at Roper Hall when the House of Commons meets. The question may have been raised by the time these notes appear in print, or it may have been crowded out till later, but anyhow it is satisfactory to learn that the scandal is to be ventilated in the proper place.

Meantime nothing has been heard, publicly at any rate,



Reproduced from "La Guerre Aerienne."

A Halberstadt Two-seater Fighter equipped for contact Patrol work. Note the rows of signalling cartridges and hand-grenades, and the telescopic sight on the machine-gun.

of the reconsideration of the cases of the women who were turned down. Mrs. Gwynne-Vaughan has had plenty of time now in which to do the right thing, and, as suggested in this paper a fortnight ago, call up all the rejected candidates for a fresh inspection on their merits, but unfortunately one can learn of no action on her part. One has heard, however, that someone or other in some official position or other has promised tentatively to send if possible for the papers of the rejected ones if they can be found and see without prejudice whether any of them are worth reconsidering if officers are still wanted.

That is not the way in which to deal with an affair in which gross injustice has been done to a number of thoroughly useful young women, and in which a piece of fatuous official bungling has deprived the country—not to mention the Royal Air Force—of the work of people who are eminently the material of which officers are made. The more one learns about the women who were turned down—and it is surprising to find the curious directions from which such information does come—the more one is convinced that the selection committees possessed considerably better judgment than the rejection committee. Which makes it all the harder to comprehend the mental state of one official who selected so many of the candidates herself and then turned them down afterwards.

Also, further knowledge of the subject forces one to disagree directly with the judgment of the Baronne T'Serclaes, as expressed not only in her statement to the Press, to the effect that the rejected ones were not the material of which officers are made, but still more in her remark to a subordinate who was found weeping over the turning down of so many potential officers, the remark being to the effect that the rejects "were not worth it." It may be no use crying over spilt milk, but the way in which incompetent officials waste man and woman power which might be useful to the nation would be enough to make a strong man weep if it were not utterly foolish enough to make a cat laugh.

Mrs. Gwynne-Vaughan's Opportunity.

However, nothing so far seems to have been done officially, which is a pity, for the new Commandant, Mrs. Gwynne-Vaughan, might have strengthened her hold on the respect of the Wrafs quite considerably, and have won their affection to quite a remarkable extent, if she had boldly stood up for the right thing and had ordered on her own responsibility a revision of the whole affair. One fears that this good lady, like so many of the people in minor official positions in this country, suffers from a hypertrophied sense of respect for what is officially known as "duly constituted authority." The really successful men, and women, of the war are those who read the rules of the duly constituted authority very carefully, and then find a convenient semi-colon which permits (frequently it is put there on purpose) a coach-and-four to be driven through the regulations.

A turned-down candidate for a commission is, in theory, turned down for ever, but, so far as one understands King's Regulations, there is nothing whatever to prevent him or her from coming up again for examination on receiving a gentle hint from some other duly constituted authority, and the Commanding Officer who cannot wink at salutary irregularities is unlikely to be a success. There is much truth in the old catch-phrase, "Rules are for Fools," the implication being that wise people lay down their own correct line of conduct, and wangle round all rules when it seems wise or politic to do so.

An Applicable Parable.

This unquestioning obedience to rules and regulations always reminds one of a delightful story of a little girl who went for a walk with her nurse. Her mother thought they had gone to Kensington Gardens, where the really nice children go—not to mention Peter Pan—but nurse, who liked the society down Chelsea Barracks way, took her to Battersea Park, where there are nasty, grubby, infectious children. When she got back home the little girl told her mother they had been to Battersea Park, and mother promptly bit the nurse badly about taking her daughter to such a horrid place. Nurse stoutly denied having been to Battersea, and lamented that such a nice little girl should be so untruthful. Whereupon mother asked the little girl what she meant by it. And the little girl replied humbly, "Well, mother, I *thought* we went to Battersea Park, but if nurse says we went to Kensington Gardens we must have gone there, 'cos grown-ups always know best."

There you have the root of half the troubles of this fool country, and one strongly suspects that it is largely the cause of the delay in redressing the wrongs of the rejects of Roper Hall. Grown-ups don't always know best, and rules and regulations don't either.

By all the rules of war we have been beaten at least three times a year ever since the Battle of Mons, and yet Sir Douglas Haig insists on going on winning, whether Mr. George sends him violently prompted spontaneous congratulations or not. If grown-ups like the German professional soldiers had known best, we and our army of military children would have been comfortably at peace, working for German task-masters, three years ago. All of which goes to show that in a young job like running the Wrafs it is well to depart from precedent and do what is obviously the decent thing rather than what is the strictly correct thing according to the ideas of a grown-up Service.

It is perfectly hopeless to try to drive girls of the Wraf and Waac and Wren class under a system of Prussian discipline. The girls themselves and the junior officers as well need to be treated as human beings. They don't mind roughing it physically, they don't mind their four Army blankets and a board floor and a plank bed instead of luxurious boudoirs, but they do expect human sympathy, and personal consideration. And to develop a humanly sympathetic system the right type of officer is needed, which is precisely what the Roper Hall rejection committee threw away.

The "Old Army" Way.

In the Old Army the subaltern and the company-commander had the maxim, "Get to know your men," hammered into his head as the chief principle of the successful officer. And the next principle was, "Never let down your subordinates." The battalion in which the officers were always changing was always a bad battalion because the officers never got to know their men. And the battalion in which the Colonel did not stick up to the Brigade on behalf of his officers was worse.

It is even more so with these women's Corps, where the human material is so much more sensitive. If Mrs. Gwynne-Vaughan ever hopes to make the Wrafs a success she must select her officers carefully, leave them alone to win the confidence and affection of the girls under them, and then, when they have won that confidence they should be left alone more severely than ever, so that they may get the best work out of the girls without interference from duly constituted authority.

The only officer who should ever be moved is an unpopular officer. Those who are known to be popular and efficient as well should be promoted, but even then they should be left with their former units under their command as a nucleus from which to spread their popularity. It is perfectly hopeless to try and run a mass of women volunteers as if they were battalions of conscripts. They can be made to do anything by winning

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their respect and affection, and in no other way can they be made of any use at all. If once they start sulking because popular officers are taken away from them, or because they have bad officers, then Heaven help the poor mere men things for whose benefit they are supposed to be working.

Mrs. Gwynne-Vaughan was, apparently, not responsible personally for the Roper Hall affair, because she never even visited the place while that particular course was in being, but officially she is responsible because she was already Commandant W.R.A.F. when the incident occurred. Therefore, it is up to her and to none other to see that justice is done. Her moral duty is perfectly plain, no matter what the duly constituted authority above her may say. Either she should give all the rejected girls an entirely fresh start, or she should resign her post by way of protest.

A Case for Inquiry.

As regards Miss Douglas-Pennant, she is certainly not in the least responsible for the affair, because she had been summarily dismissed by someone or other at the Hotel Bolo before the Roper Hall course was over. One has already expressed one's suspicions that the wholesale turning down of candidates for commissions was part of a scheme to discredit Miss Douglas-Pennant by discrediting the people selected under her régime, and the more one looks at the whole affair the more that seems to be the only explanation alternative to the one other—namely, that the rejection board was composed entirely of congenital imbeciles who ought to be summarily dismissed by Mrs. Gwynne-Vaughan.

It has been stated in the Press that Miss Douglas-Pennant has applied for an inquiry to be held into the reason for her dismissal. One hopes sincerely that such an inquiry may be held very soon and very thoroughly. And one would not be surprised if, provided it is sufficiently thorough, such an inquiry should disclose some more of that vast mass of intrigue and jealousy which long ago won for the Hotel Cecil the unenviable nickname of The Bolo House.—C. G. G.

THE GUILD OF ST. MICHAEL.

It is good news to hear that the Guild of St. Michael for aviators is progressing like the Allies' "Peace Offensive." Father Morgan, the Director of the Guild, says that members and associates are rolling in rapidly. Various and sundry officers who have won D.S.Os. and M.Cs. have already joined, and, naturally, quantities of Irish officers and aviators have come into the Guild.

The following paragraphs from St. Michael's Magazine will be of interest to those concerned with the Guild:—

"The chief event of September was the Guild Day, Sept. 29th, the Feast of S. Michael and all Angels, on which day we were honoured by the presence of the Cardinal at the Guild Church of S. Michael. The Cardinal preached at the 10 o'clock Mass a stirring address on S. Michael and the Guild, which was fully reported in the Catholic Press. We are most grateful to His Eminence for the encouraging and helpful remarks made on this memorable occasion; and undoubtedly large numbers of new members and associates will result. The kindness of the Cardinal in coming is made the more noteworthy by the recentness of the Official Visitation, but we know that His Eminence has the interests of S. Michael's Guild very closely at heart.

"The month of S. Michael was one of considerable progress. Fresh members poured in from all quarters, but especially from France. Aviators from Britain, Canada, Australia, New Zealand, and U.S.A., serving in France, have flocked to S. Michael's standard, and are now wearing S. Michael's medal. One air-station in France has contributed a hundred members. This is a record so far, but others are running up fast. Egypt, Mesopotamia, and Italy, have furnished several fresh members, and the home stations, too, are well represented on the September list.

"We must correct a misapprehension. Some seem to regard the Guild as 'Father Morgan's,' whereas it is the Cardinal's Guild, and Father Morgan is only the Director of it. It is the Cardinal who issues the invitation to Catholic aviators, an invitation which is accepted by all as fast as they hear of it.

"What a vast number of Catholics there are in the Air Forces! There seems something peculiarly attractive to Catholics about flying. What is it? A Protestant correspondent, noting the fact, says he supposes it is because 'all Catholics hope to be flying as angels in Heaven some day.' Rather bad theology, because we do not become angels.

"Anyhow, there is an extraordinary high percentage of Catholic aviators, and they are all joining the Guild. Do you know any Catholic aviator who is not a member of the Guild? Then it can only be because he has not heard of it; tell him about it, and note the rapidity with which he joins up! It appeals to them all.

"One writes from 'somewhere in France'—'I am more pleased about the Guild than I can say. It is "some" idea. A Guild of S. Michael for aviators is just what we all wanted. God bless you and your noble work.'

"And this is from a home aerodrome. 'We are all very grateful to you for forming a Guild for us under the name of S. Michael. I hope no end of associates will join as well. We shall want heaps of prayers when we get out there, and meet the Rumplers and Pfalzes. You may be sure I will stick close to my medal!'"

Referring to recent notes in The Aeroplane, the Magazine says:—

"He (the Editor of The Aeroplane) makes one criticism—the word 'Aviators' should be substituted for 'Airmen' in the name of the Guild. The Air Ministry has recently declared that 'Airmen' shall apply to N.C.Os. and men only, excluding commissioned officers; whereas 'Aviators' includes all. Of course, we want to include all; and, as a matter of fact, 'all' are joining, the proportion of officers being high. But as misapprehension might arise in the future, we have gratefully adopted the suggestion."

The Magazine says further:—

"The office of S. Michael in the Breviary contains gems which will delight you. Note the following (translated into English). 'O Prince most glorious, Michael the Archangel, remember us and pray for us.' 'As often as anything very mighty is to be done, we see that Michael is sent.' 'Great things are spoken of Michael, who waxed valiant in fight and won the victory.' 'Lo! Michael came to help me, and I then obtained the victory.' 'The sea was moved and the earth quaked, when Michael descended from heaven.'"

[This, unfortunately, sounds rather like a bad landing.—Ed.]

"And the verse of a hymn:—

'Thus we praise with veneration,
All the armies of the sky;
Chiefly him, supreme in battle,
Leader of the hosts that fly,
Michael, who in princely valour,
Cast Abaddon* from on high.'"

*Abaddon = The Devil.

Those who are not yet in touch with the Guild should write to the Rev. A. N. Morgan, St. Michael's Presbytery, Ashford, Middlesex.

Meantime, one awaits with interest news of what is being done on behalf of the poor heretic aviators, who have no kindly Fathers of the Church, nor Cardinals, nor Archangels to look after their spiritual welfare when they are too busy with Huns to look after it themselves.—C. G. G.

THE W.R.A.F. PAY QUESTION.

According to the "Daily Chronicle," for some time there has been trouble among the 700 "Penguins" at a Royal Air Force store in outer London on the question of pay, and on Oct. 11th one of them, Dorcas Gallant, a storewoman, whose home is in Grange Road, Bermondsey, was charged with conduct likely to delay essential war work.

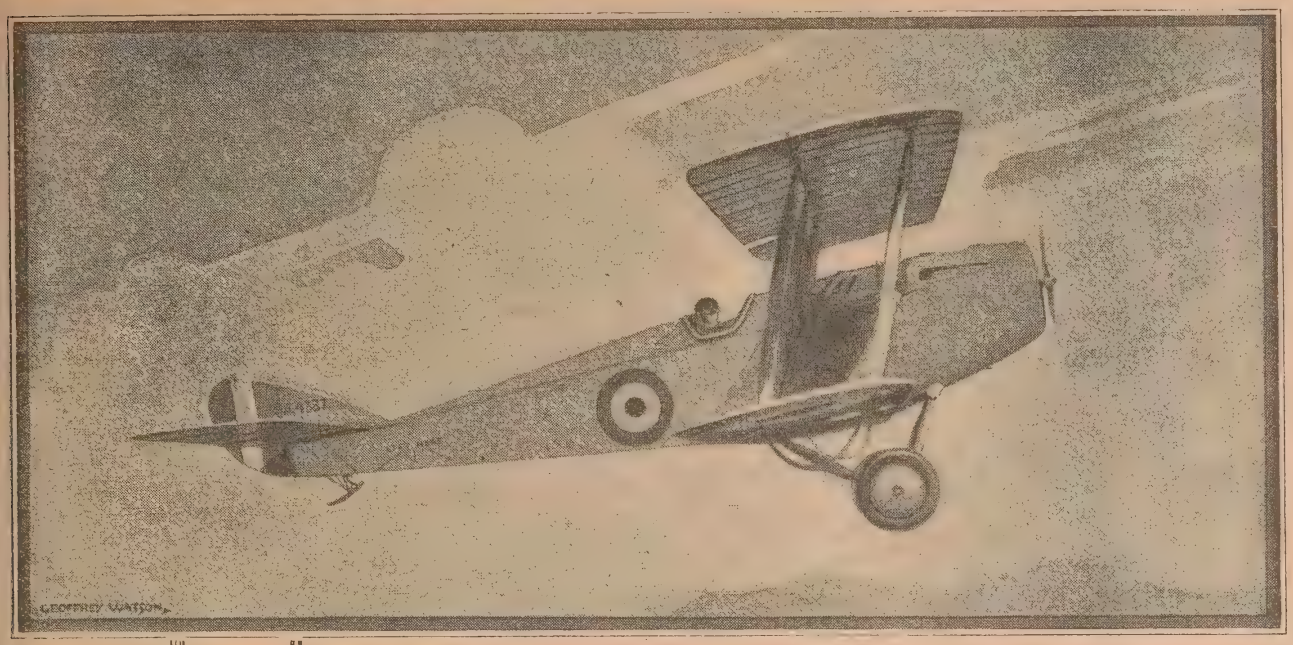
Defendant was a member of a deputation to the Air Ministry, and afterwards it was alleged that she stood on a form in the canteen and told the girls that their leader had "let them down," but if they would meet in the canteen on Saturday morning she would see they got what had been promised to them. She concluded: "Now, girls, will you stand by me?" and the girls shouted "Yes!"

All the witnesses said it was understood, from what had happened before, that a strike was intended, and one stated that subsequently she said to defendant, "It's very unfair to do this while our boys are at the front." Defendant replied, "It's not a living wage, and it's nothing to do with the boys at the front."

Defendant said that when she told the girls to meet her in the canteen she did not intend them to do so in Army time, but before starting work, and she had no intention of agitating for a strike.

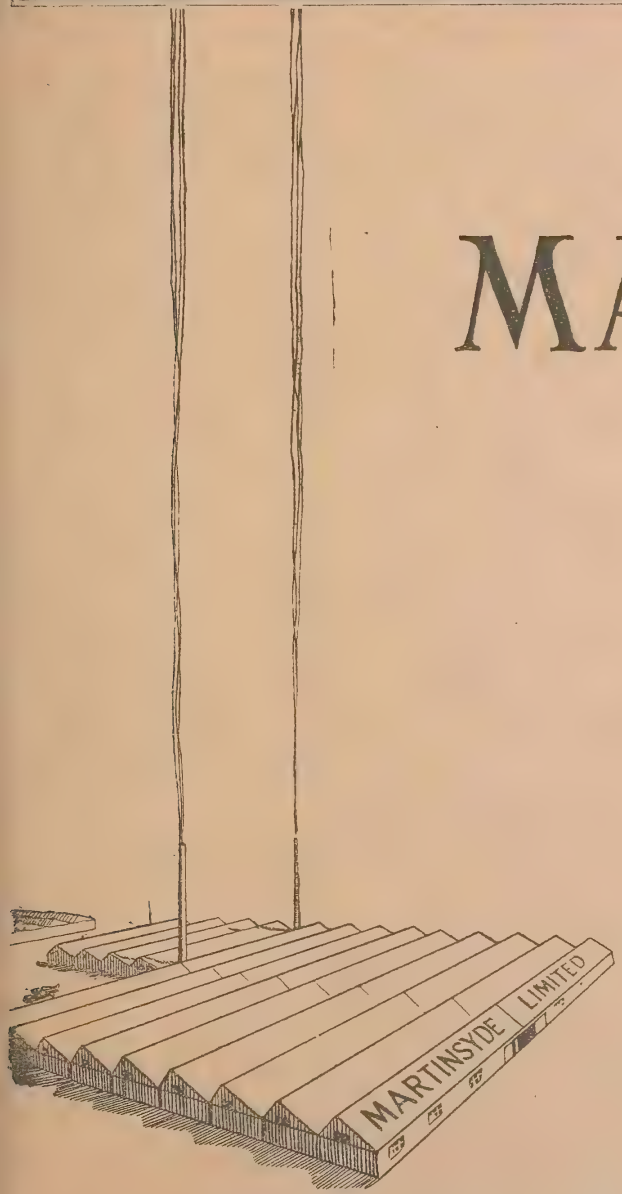
In fining defendant £5 the magistrate gave a general warning that if any more girls from these stores were convicted of a similar offence they would be sent to prison.

[It would be a good thing if the high and mighty Authorities would show this Prussian thoroughness in relation to Bolshevik trench-dodgers in factories instead of venting their terrors on a lot of patriotic young women who have no need to enlist at all if it pleases them to do otherwise.—Ed.]





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WOKING, Surrey.

THE ARMY AIR FORCE.

Practically a continuous offensive was conducted by our aviators against the network of railway, of which Valenciennes, Douai and Cambrai are the vital junctions.

Before the British infantry attack was launched against the German positions between Cambrai and St. Quentin, on Tuesday morning, Oct. 8th, 163 tons of bombs were dropped by our aviators on these and other military objectives: 90 tons being dropped by day, and 73 tons by night.

The usual co-operation with the advancing infantry was carried out, and British aviators also dropped smoke-bombs to screen the troops.

Eighty-nine German machines were destroyed and 27 driven down out of control, in the course of air-fighting during the last week. Fifty-three British machines were reported missing.

A large number of photographs were taken of enemy positions, the photography machines being ably protected by scouts.

For the month of September 607 German machines were either destroyed or driven down out of control, the following being the official details:—

Enemy machines shot down and destroyed in aerial combat	378
Enemy machines driven down out of control	159
Enemy machines destroyed by anti-aircraft fire	11
Enemy balloons destroyed	59
Total	607

At the same period 236 British machines were reported missing.—R. M.

I.A.F. OPERATIONS.

The R.A.F. Independent Force raids into Germany are gradually growing more extensive every month, as will be seen from the following table of the weight of bombs dropped during the last four months.

June, 1918	66 tons.
July, 1918	81 ,,
August, 1918	100 ,,
September, 1918	178¾ ,,

The following is a list of the more important places in Germany attacked (exclusive of aerodromes, etc.), showing the precise military objectives upon which the bombs were discharged, and the number of times each place has been raided:—

Towns.	Objectives.	Number of times raided.
Metz-Sablons	Railway junction and triangle	24 times.
Mannheim	Chemical factories	Six times
Karlsruhe	Factories, docks and station	Four times.
Ehrange	Railways	Four times.
Kaiserslautern	Factories	Three times.
Saarbrucken	Railways	Twice.
Thionville	Railways	Twice
Frankfurt	Factories and railway	Twice.
Burbach	Blast furnaces	Twice.
Hagondange	Blast furnaces	Once
Mainz	Railway junctions	Once.
Rombach	Blast furnaces	Once.
Stuttgart	Factories	Once.
Trèves	Station	Once.

In addition to the above, a large number of very effective raids have been made during September upon the German aerodromes at Buhl, Boulay, Frescaty, Morhange, etc.—R. M.

THE WORK OF THE R.N.A.F.

During the British, French and Belgian advance on the Belgian coast, which began on Sept. 28th, the 5th Group, R.A.F., which acts in conjunction with the Navy, was detailed to cut and harass the avenues of communication by which German troops and supplies could be brought up to the front.

The German batteries all along the coast-line were subjected to a terrific bombardment by monitors out at sea and the guns of the R.M.A. in Flanders, during the night of Sept. 27th-28th. Two monitors also shelled the batteries at Zeebrugge, where there had been much activity of late. Later examinations of this region by aeroplane confirm the impression that the Germans were for the moment overwhelmed, possibly even to the point of making preparations for an evacuation.

With the coming of daylight the ships and Marine batteries shifted their fire to inland targets, and the special task of the 5th Group, R.A.F., began. The proposed operation was kept quite secret, the aviators themselves only learning their objectives just before the start.

About a hundred machines took part and the majority of the pilots were quite conversant with the ground over which they were flying, as they had been engaged in this part of the front for many months past.

The German communications from the front to Ostend, Bruges and other more distant places, consist mainly of a system of roads and railways, which meet and gather themselves into cross-roads and junctions at a number of well-defined points, such as: Thourout, Lichterwelde, Cortemarck, Dixmude, Staden, Zarren and Roulers. These vital points were continually bombed and machine-gunned by the 5th Group, R.A.F., who also, in co-operation with a Brigade of the R.A.F. and the Belgian Air Force, dropped supplies for the troops in the trenches whose food was running out.

Our losses in machines and personnel were very light for the numbers engaged and considering the bad weather, but a good number of German aeroplanes were destroyed.—R. M.

AMERICAN AVIATORS IN THE ADRIATIC.

From an American seaplane station on the Adriatic an escorted patrol was recently sent to the Austrian port of Pola. The operation only involved about an hour's journey to Pola, which was reached safely.

There, however, five heavy enemy land-machines of the Albatros type were encountered flying lower than the American patrol, which was outnumbered. The reconnaissance machines made their escape while the chasers dived to engage the German machines.

After a short fight one of the Americans was compelled to withdraw owing to the jamming of his machine-gun, but at the same time a German machine drew out of the fight, apparently with his radiator perforated.

One Ensign Ludlow was attacked by two German machines, and very soon his machine was hit in several places and the engine caught fire. Switching off quickly, he put the machine into a nose dive, which put out the flames. Flattening out, he landed on the water five miles from Pola.

Qrmr. Hammann, who had been doing his share in the fight, on seeing the predicament of the officer, broke off the fight by getting into a nose-dive, leading the Germans to believe that he had been finished. Hammann flattened out and taxied along the surface towards Mr. Ludlow's machine. As soon as Mr. Ludlow perceived Hammann coming to his assistance, he at once opened the camera slot in the bottom of the boat and kicked out the sides so as to let the water in. He then jumped into the water and swam to Hammann's machine, which was apparently a single-seater flying-boat, and hung on to the tail Hammann fired at the derelict machine until there was no possibility of the boat remaining afloat, and then Mr. Ludlow clambered on to the top of the hull and lay there under the engine.

After some trouble, Hammann managed to get the machine off the water, but not before the bow was damaged The boat eventually regained its base with the double load, but turned over in alighting. The two men were rescued by a motor-boat which put off from the shore.—R. M.

ANOTHER AERODROME SCANDAL.

From the "Daily Chronicle" of Oct. 12th:—

Astonishing details of the way in which money is declared to be wasted in aerodrome work were given at a meeting of Epping Rural Council on Oct. 11th. The Ongar Council, who have also taken the matter up, sent a copy of a letter they have sent to the authorities, and they asked Epping Council to support them.

In this letter it was alleged that the most incompetent and lazy man could apply at the aerodrome and be given employment at from £3 to £5 a week. Here he could continue in idleness because he had little or nothing to do

Mr. R. C. Lyall, a member of the Epping Council, said he had inquired into the matter, and had discovered a scandalous state of affairs. He had heard of a boy of 15 who was engaged at £3 a week. One day his work was to sweep up a hall with another boy. When they had finished the foreman kicked the heap of dust about and told them to do it again, as they had done the work too quickly.

A man admitted that a day's work consisted of carrying a ladder from one place to another, whilst he also stated that it had taken a large number of men, sometimes as many as 40 being employed on the work at the same time, since February to dig a short piece of ditch.

It was decided to demand an immediate inquiry

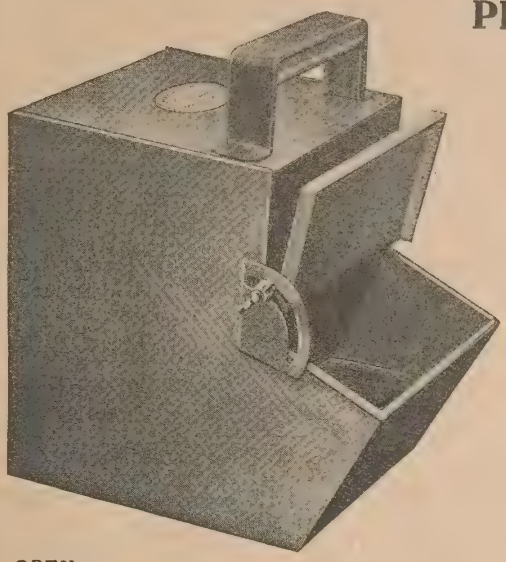
[If the country really wants the Air Force to be efficient one can find plenty more instances worse than this to be exposed.—Ed.]

THE DAY'S WORK.

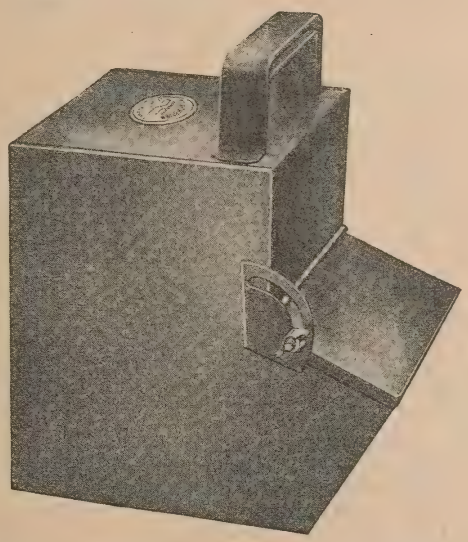
The following account from a correspondent with the French Armies is taken from the "Daily Telegraph" of Oct. 11th:—

For the first time yesterday (Oct. 9th) in the Meuse region as many as 200 Allied aviators took the air together. This great expedition included chasers and bombers, and while the former brought down twelve enemy machines, themselves losing only one, the latter dropped many tons of explosives on the German positions.

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THAT WHICH HATH WINGS.

A new Army Council Instruction (1110 of 1918) intimates that pilot's and observer's "Wings" are now badges peculiar to the Royal Air Force, and are worn by Army officers only when serving with the Royal Air Force.

A.S.C. AEROPLANES.

An incident reported in connection with the offensive in Flanders is worth chronicling as one of those examples that it may be desirable to quote later on. Certain Belgian divisions reached a point the roads behind which had become impassable, and there ran short of food. A thousand army rations were sent up and dumped by aeroplanes after having been divided up into parcels and packed in sacks of earth to break the fall. The waiting divisions prepared dumping grounds suitably marked, and here the provisions were dumped and were received without damage. In the course of a few hours thirteen tons of food were delivered in this way.

There is nothing very remarkable in all this, but it is at least an example of commonsense promptly indicating a somewhat unusual application of known powers. During the attempt to relieve Kut, food was, of course, dropped by aeroplane into the beleagured town. These afford, perhaps, the first examples of the use of aeroplanes as part of the equipment of an Army Service Corps.

The Army Service Corps may be described as the business and shopping department of the Army. It is essentially a commercial undertaking, though it is complicated by military conditions. The time may well come when aeroplanes will form part of the regular equipment of this gigantic business, and these first successful experiments may fairly be classified as temporary commercial aeroplane services.

There is a more obvious connection between ordinary commercial work and the carriage of food than between such work and the carriage of bombs. The difference is more apparent than real, but it makes the incident mentioned above more useful for purposes of quotation when the time comes to convince a dubious public of the real commercial utility of aeroplanes.—Medway.

HOW NOT TO DO IT.

An advance party comprising 400 Americans recently operated against Moulin de Charlevaux, north-east of La Paletta, and captured the position. The German units on the right and the left of the American force offered a strong resistance, and were able to surround the small party.

The Americans dug themselves in and established machine-gun and trench-mortar posts, realising that it was a case of fighting a siege battle. On the second day, the besieged party ran out of supplies, and although aeroplanes were sent out to relieve the tension by dropping food, it always fell just out of reach of the men in the trenches, the Germans shooting every time the Americans tried to get it. Pigeons were also dropped from aeroplanes, so that the Americans could communicate with headquarters, but the birds persisted in alighting in bushes out of reach and in the open.

After five days' siege the small party was rescued by Col. Haughton's Regiment, which cleared away the Germans in a successful attack.—R. M.

FRENCH NAVAL ACTIVITY.

A semi-official statement issued in Paris on Oct. 7th says:—

"The activity of the various French Naval air groups was very intense during the month of August. Aeroplanes and seaplanes flew a distance of 495,000 nautical miles, carrying out 4,288 patrols of a total duration of 8,595 hours. On the other hand, French Naval airships made 286 flights, spending 1,924 hours in the air, and covering 77,020 nautical miles. Altogether, during the month of August, 572,720 miles were covered in 4,574 patrols, as against 485,330 miles covered in 4,194 patrols in July. Captive balloons carried out 185 flights of a total duration of 3,346 hours. The utility of Naval sausage balloons no longer requires to be demonstrated, both for patrol work, protection of fisheries, or searching for mines, but their durability has equally been proved. Thus, a captive balloon managed to remain for 25 consecutive days without being deflated in tow of its trawler."

THE AMERICAN BALLOON CORPS.

Owing to the increased demand from the American Expeditionary Forces for balloon crews, the Balloon Corps of the American Army is to be increased to 25,000 men and 1,200 officers. The corps now numbers about 11,000 men of all ranks.

DEATH OF A FRENCH ACE.

According to the "Petit Parisien" Capt. Raymond, the leader of the famous "Stork" air squadron, died on Oct. 4th at Châlons-sur-Marne as the result of his aeroplane having crashed.

THE DISAPPEARANCE OF ROLAND GARROS.

Reuter's correspondent in Paris sends the following particulars of the disappearance of Lt. Roland Garros:—

After Lt. Garros escaped from captivity, he was besought to remain in the rear, where his brilliant qualities as a theoretical and practical mechanic would, it was thought, be most advantageously employed in the study of new types of machines and engines. A splendid post was offered him by a famous aeroplane constructor, but Lt. Garros was not to be moved. "I did not take three years in escaping," said he, "in order to remain in the rear after a few months' rest." On his return to France, he devoted himself for a short time to his studies and experiments, and finally, at his own request, was attached to a flying squadron at the front. Last Friday afternoon (Oct. 4th) he brought down an aeroplane. The following morning he set out on a reconnaissance flight with some of his fighting comrades, and came upon an enemy squadron. What happened afterwards is not known. The two pilots saw his machine later in a disabled condition, but Lt. Garros himself had disappeared.

His disappearance is regarded on all sides as an inestimable loss, and all the papers devote long articles to this unfortunate event, while expressing the hope that the famous champion may have landed safely.

* * *

Mr. H. Patrick Devitte writes as follows in the "Daily Express" from Geneva on Oct. 9th:—

A report has reached Basle that the famous French aviator Garros, whose machine was recently brought down over the enemy's lines, is a prisoner of war in a German camp near Coblenz. He is wounded, but not seriously.

[One sincerely trusts that such is the case, but confirmation of the report is lacking.—Ed.]

LORD NORTHCLIFFE'S OPINION.

Lord Northcliffe, at a luncheon given to the American Editors at Printing House Square on Oct. 10th, said:—

We have to look—we who are engaged in the business of spreading public intelligence—at the effect on our own industry of some of these developments. Take flight, for example. Will flight concentrate newspaper production into one or two hands in great centres whence the newspapers may be disseminated by flying machines? Personally, I do not think it will. I know that there are provincial communities apprehensive of the destruction of their own local public opinion—one of the most valuable inspirations towards national judgment.

[One quite agrees with Lord Northcliffe. Take this country, for example, in which all the Metropolitan daily and weekly press, with a few honourable exceptions, are under the thumb of Mr. George and his clique. If it were not for the honest opinions of local and provincial papers, we should have no national judgment whatever. Even as it is, national judgment has been doped into a state of innocuous desuetude.—Ed.]

MISTAKEN IDENTITY.

Further details are now to hand concerning the German attack on a Swiss kite-balloon. Telegraphing from Berne on Oct. 7th, Reuter's correspondent states:—

"The balloon, which was stationed at Miécourt, had on board Flt. Lt. Walter Flury, of Soleure. It carried all the necessary distinguishing signs: Two large Swiss flags and two Federal crosses painted on the outside. About 9.35 in the morning two aeroplanes were seen coming from the east and keeping along the frontier. At the same moment the observer gave the signal to lower the balloon, which was immediately done.

"Meanwhile, one of the aeroplanes, which clearly bore the German distinguishing signs, circled several times above the descending balloon. When the latter had been lowered to within 800 metres (about 2,500 ft.) of the ground, the German aviators discharged salvoes of machine-gunfire, dropped a bomb or a similar object, and made off in a northerly direction. The balloon suddenly burst into flames and crashed to the ground. The observer's charred body was afterwards recovered.

"Immediately on hearing the news the German Minister visited the President of the Confederation, and expressed his deep regret at what had taken place. He likewise gave an assurance that the German authorities would immediately open an inquiry, with a view to establishing responsibility for this crime and of punishing the guilty party. The Federal Council is still awaiting the definite report, which is immediately ordered, before taking the measures demanded by the gravity of the case."

[It is an interesting point as to whether the inspection of a belligerent country's territory by a neutral balloon observer is or is not a violation of international law.—Ed.]

NANKING'S GIFT.

The Nanking Branch of the Over-Seas Club and Patriotic League has just sent £322 as a contribution to the Royal Flying Corps Hospital Fund. The club has subscribed over £28,000 towards the care of our wounded flying men.


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SOME BOOKS TO READ.

THE L.S.D. OF FLYING.

In the books among which I browse so happily, money appears only as an incidental. Balzac, if you remember, is very particular to give you the precise incomes of his characters, and their financial embarrassments are depicted with the awful clarity of experience. There was that entrancing tale of Stevenson's "The Bottle Imp," and I think our O. Henry weaved a pretty tale round a five-dollar bill.

You will recollect how Henry Rycroft, that rare spirit, had the wings of his spirit clipped for the lack of it—in one of the best books that Gissing ever wrote. Zola's appalling "Germinal" has money, the bitter grinding lack of it, for its mainspring, and one of Charles Lamb's most delicious essays (I refer, of course, to "Old China") proves that it is a thing that of itself does not always mean happiness.

But who would not be startled to receive a book on "The L. S. D. of Flying," such as has been written by Capt. Arthur J. Swinton, late R.E. (Aeroplane and General Publishing Co., 6s.)? At first glimpse one might be tempted to think that the author is diving too rapidly into the future, that he is trying to administer a prod to the unhurrying march of evolution. But this merely proves that one is in danger of growing old-fashioned, and the orderly sequence of suggestion and accomplished fact that is to be found in these pages may soon be accepted commonplace, and within our time the hurrying traveller may take his aero-taxi with no more amazement than the city clerk of our day jumping on the 'bus to Walham Green.

The book covers such facets of the subject as the use of the flying machine; elementary technicalities and types of machines; trade, geographical, and other considerations; the permanent way, and its cost; the provision of 'flying stock" and running costs (this sounds oddly to the unaccustomed ear!); a comparison of flying-machines and other vehicles; the mails of the world and the principal trunk lines; private aeroplanes and flying clubs (with an intelligent anticipation of the aerial Ford and the aero-taxi); the shortcomings of the flying machine; and concludes with a conjectural chapter on what may reasonably be expected from the State as regards the development and assistance of the aircraft industry.

The writer has manifestly exhausted all the sources from which he could draw data on which to base his premises, and the result is an interesting and stimulating piece of work. He disposes at the outset of the man-in-the-street contention that flying will never be developed to that point where travel by air will be as safe as the unexciting growler by adducing our insular antipathy at the beginning in respect of trains, steamboats and the 'phone.

He wisely does not err by excess of advocacy, and evades the error, common to many enthusiasts, of ignoring obvious limitations, such as carrying capacity. He expresses the opinion that the utility of the aeroplane will be more overwhelmingly apparent on long-distance journeys, and here one is whole-heartedly in agreement with him.

"Except for very short journeys up to 100 or 150 miles," he says, "in which the time is hardly sufficient for the aeroplane to show any material advantage, an express aero-mail service shows an enormous superiority over any train service; the overall speed would be more than twice that of the train, and six times that of a mail-boat."

With regard to passenger services, he foresees that machines may be expected that will carry 20 passengers in comfort; and his figures would tend to prove that this could be done at a figure which would be warranted by the urgency of special business.

He draws particular attention to the limitless possibilities that exist in such countries as South America, where rising communities, widely separated, are connected by services which are precarious and slow; and points out the incalculable advantages that would be derived from the installation of aeroplane services in such places.

(In point of fact, and this is an instance of which Capt. Swinton may not be aware, the Government of Colombia has already awakened to this necessity, and several tentative efforts, unfortunately terminated by the war, were made at establishing communication with the city of Bogota and the mouth of the Magdalena River, which, it was proven, would have effected a saving of 10 clear days in transit.)

The author has gone so far as to work out in some detail estimates of permanent-way cost for main routes, also running costs; which are placed, for the sake of comparison, by the side of those accepted for other vehicles.

He is the more convincing inasmuch as he is never over optimistic, and shows no tendency to slur over limitations. The interesting opinion is expressed that practically the whole business of the distribution of samples would be diverted to the aerial services, as it is manifest that in such cases there is business directly dependent upon the result, and it would be necessary to get the transaction through quam celerrime.

He foresees a time when, by means of standardisation and quantity production, a reasonable two-seater machine could be turned out at a price within the reach of all those who could afford to buy a moderate priced car.

An interesting map of proposed aerial routes for the future is inserted, and, taken as a whole, the book constitutes an attractive and suggestive thesis on the probable future of aircraft development, and its financial aspects.—R. H. B.

PLANE TALES FROM THE SKIES.

Among the new books published this autumn by the House of Cassell is "Plane Tales from the Skies," by one "Wing Adjutant," the price of which is 2s. 6d. net. The title, which brings to mind certain of Mr. Kipling's not entirely unknown stories, is attractive, and so is the slip cover—and the price. But unfortunately the actual reading matter does not come up to one's expectations.

One has heard a good deal, one way and another, about "Wing Adjutant's" work, and expected something better and more accurate from one who appears to be a member of the Royal Air Force. The general style of the book reminds one of the stuff sent out unofficially by the Official Press Bureau, or that of articles published in a certain section of the daily Press. In fact, the whole thing strikes one as having been written for an ill-informed and uneducated section of the public.

The stories are plainly written and seem to have been severely condensed on account of shortage of space. Though things are plentifully described, the descriptions do not carry conviction, and it is at times difficult to follow the writer with any clearness.

In the first chapter—and remember this is merely a re-hash of official gazette citations connected by a few sentences—there are several bad slips, three of which deserve comment.

One imagined that it is pretty generally known that, unhappily, Major Lanoë Hawker is not alive at the present time. It would almost seem that for all "Wing Adjutant's" care in warning people not to mistake Major Hawker for the civilian Australian pilot of that name, he has fallen into the error himself.

Again—and surely this is about the worst mistake of all—"Wing Adjutant" states on page 18: ". . . . on May 1st, the day on which the Royal Air Force was formed." One was under the impression that one of the many nicknames of the R.A.F. was sufficient to indicate its day of birth as being April 1st.

There is some excuse for the substitution of D.F.O. for D.F.C., owing to the general confusion caused by the creation of so many comic new Orders, etc. And it is quite a usual misapprehension of the ignorant public to call Capt. Robinson's Schütte-Lanz airship a Zeppelin.

Also it would appear either that "Wing Adjutant" has discovered a new type of machine which the Censor has failed to delete, or that he does not yet understand the workings of an aeroplane, for he says in one of his would-be descriptive passages: "Again the observer halted the machine, and once more it hovered like a hawk." One imagined that the hovering aeroplane was dead, except in the minds of inventors of helicopters and in the writings of the more futile species of author.

However, some of the stories are amusing, and at worst they merely remind one of those perpetrated by Mr. Edgar Middleton or Mr. Clarence Winchester.—S. F. B.

THE FLYING POILU.

When the publisher who gave us O. Henry tells us that "here is the heart of the Poilu in this charming tale of a Paris street urchin who wins his way to the Aviation Corps," one may be excused a flutter of pleasurable anticipation. That feeling may be slightly dashed when we go on to read that "each chapter is a thing of beauty, dramatic, moving us to tears or laughter—full of humour, excitement, pathos, gaiety—in a word—of the inimitable French *élan*." To complete this disillusionment it is only necessary to read the book. It did not make me weep, but at least I yawned prodigiously.

"The Flying Poilu" is the Odyssey of one Chignole, an erstwhile *gamin*. We are shown his development from an unconsidered atom in one of the great automobile factories at Puteaux to a responsible unit in the *aviation militaire*, and as an earnest of his quality in the latter capacity the translator assures us that there was none to excel him "when it came to teaching a refractory magneto about the laws of the clutch."

I am not without sympathy for the lady who has made this English version, remembering my own unhappy flounderings through the "Roman d'un Jeune Homme Pauvre" while in the fifth form. It is only too evident that Madame Huard has adopted similar methods, and has guessed wildly, omitted and hashed generally, and—Oh, worst *faux pas* of all!—has substituted for the lissome slang of France the worst dialectical angularities of America. The effect is calamitous, and to say that Madame Huard "has portrayed the courageous soul of France for all to see and love," as the publishers brazenly do, is to be no less than sacrilegious.

In a stilted way we are given a few silhouettes—the writer aims rather at depicting a type than telling a story—of life as it

The Treasury has been consulted under the notification of the 18th January, 1915, and raises no objection to the issue of the within-mentioned Notes. It must be distinctly understood that, in considering whether They have or have not any objections to the new issues, the Treasury does not take any responsibility for the financial soundness of any schemes or for the correctness of any of the statements made or opinions expressed with regard to them.

The special permission of the Committee of the Stock Exchange has been granted for dealing in these Notes.

The List of Applications for purchase will close on or before the 21st day of October, 1918.

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The Whole of which is Issued, divided into

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250,000 Seven Per Cent. Cumulative and Participating "B" Preference Shares of £1 each;

50,000 Preferred Ordinary Shares of £1 each;

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5,000 Notes of £50 Each.

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The Notes will be registered as to Capital and transferable by deed, but Interest will be paid on 1st April and 1st October, by coupon attached to the Notes.

The Company has entered into an agreement with the British, Foreign and Colonial Corporation, Ltd., that so long as any of the Notes now issued are outstanding, no Debentures or charges upon the Company's existing property or any part thereof (other than Debentures or charges to the Company's Bankers to secure overdrafts or advances from such Bankers), shall be created without the sanction of the Note holders.

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72, LOMBARD STREET, E.C.3, and Branches.

At the price of £50 per Note.

payable as follows:

£6	5s.	0d. on Application.
£43	15s.	0d. on Acceptance.
£50	0	0

A full six months' interest will be paid on 1st April, 1919.

Allowing for the profit on redemption the average yield is 10 per cent.

Interest at the rate of 10 per cent. will be charged on all amounts overdue on acceptance.

The following is an extract from a letter by Mr. G. Holt Thomas, the Chairman of the Aircraft Manufacturing Co., Ltd., dated 12th September, 1918:—

"The total amount of capital expenditure on land, buildings, plant and machinery for the purpose of extensions since the outbreak of War to the 31st March, 1918, amounted to £386,664.

. . . . Upon the basis of the profits for the year ending 31st March, 1918, referred to in the Auditors' Certificate, the fixed interest on the Notes is covered more than ten times, and, including the proceeds of the present Issue, these Notes will be covered by Assets to the extent of more than £175 for each £50 subscribed.'

Auditors' Certificate.

6, Clement's Lane, Lombard Street, E.C.4.
12th September, 1918

To the Directors, The Aircraft Manufacturing Company, Ltd.

Dear Sirs,—In accordance with your request, we beg to certify that the Nett Profits of your Company from its inception to the 31st of March, 1918, have been as follows:—

	£	s.	d.
Nine months ended 31st March, 1913	9,762	11	4
Year ended 31st March, 1914	22,256	0	3
" " " 1915	27,252	3	5
" " " 1916	60,905	2	11
" " " 1917	107,361	12	1
" " " 1918	176,701	4	5

The above-mentioned Profits are arrived at after providing for all Charges, including Directors' Remuneration, Interest, Depreciation, and Income Tax, and in arriving at the figures for the years ended 31st March, 1917, and 31st March, 1918, Reserve has been made to cover the total estimated liability for Excess Profits Duty up to the 31st March, 1918.

The surplus of Assets over Liabilities (Share Capital being excluded from the latter) according to the Balance Sheets of the Company has been as follows:

	£
At 31st March, 1913	14,300
" " 1914	30,508
" " 1915	48,626
" " 1916	99,170
" " 1917	277,645
" " 1918	663,353

the figures at the 31st March, 1917, and the 31st March, 1918, being arrived at after taking into account the total estimated liability for Excess Profits Duty to the 31st March, 1918.

We are, yours faithfully,
LESCHER, STEPHENS & Co., Chartered Accountants.

The full text of the above-mentioned letter from the Chairman, as well as full particulars of the offer of Notes, with Forms of Application, may be obtained from the Bankers, the Brokers to the offer:

Messrs. JOHN PRUST & CO.,
37, Throgmorton Street, London, E.C. 2.

Messrs FYSHE & HORTON,
75, Colemore Row, Birmingham;

Messrs. DAVID Q. HENRIQUES & CO,
13, Pall Mall, Manchester,

and from THE BRITISH, FOREIGN and COLONIAL CORPORATION, LIMITED, 57, Bishopsgate, London, E.C. 2.

This Form may be used.

This form should be filled up and forwarded to The London Joint City and Midland Bank, Limited, *Threadneedle Street, E.C.2, or any of their Branches, or to* Lloyds Bank Limited, *72, Lombard Street, E.C.3, or any of their Branches, together with a remittance for the amount payable on application.*

THE

Aircraft Manufacturing Co., LIMITED.

Offer for Sale of **No. 29.**

5,000 Seven per Cent. Short-Term Notes of £50 each at par.

To THE BRITISH, FOREIGN AND COLONIAL CORPORATION, LTD.,
57, Bishopsgate, London, E.C.2.

Gentlemen,—Having paid to your Bankers the sum of £..... being a Deposit of £6 5s. per Note on.....Notes of £50 each of the above Company, I/we offer to purchase at par that number or any smaller number of Notes in respect of which you may accept this offer, upon the terms of the Circular dated the 14th October, 1918, and to pay the balance due from me/us at the time specified in the said Circular. I/we authorise you to procure me/us to be entered on the Register of the Company as the holder of such Notes. I/we hereby declare that this application is not made by or for the benefit of an enemy subject within the meaning of the Trading with the Enemy Amendment Act, 1916.

Dated this....., 1918.

Signature.....

Name (in full).....
State if Mr., Mrs., or Miss.

Address (in full).....

.....

Occupation.....
(Please write distinctly.)

Cheques should be drawn payable to Bearer, and crossed "The London Joint City and Midland Bank, Ltd.," or "Lloyds Bank Ltd."

Any alteration from "Order" to "Bearer" must be authenticated by the Drawer's Signature.

is lived in the heart of the war machine, and in one at least some of the spirit of the original has percolated through. I refer to the frantic struggles in mid-air of the pilot and the irresponsible Chignole with a bomb which refuses to release, but which is ready and anxious to detonate.

As soon as the story begins to march you encounter some stupendous lunacy like the engine "pancaking" two hundred metres above the ground, or the pilot "backpedalling" when about to alight. The characters move jerkily as Punch and Judy, but they are not nearly so real.

The sketch of a Paris interior in war-time is not so bad, though cold as charity (Marcel Tinayre has spoiled me utterly for carelessly wrought effects of this kind), and we get a brief savour of the joys of leave in the queenly city of Paris, where "the tumult and the shouting dies."

In the fifth reel a headstrong piece of indiscipline on the part of Chignole ends in the clipping of his wings. Utterly unauthorised, he makes an emergency flight by himself; and his commander, rightly arguing that the success with which the episode was crowned in no way mitigates the flagrant disregard of orders, decorates the hero, at the same time consigning him to the outer darkness of—the infantry!

The end is wondrous obscure. Probably the translator shared the reader's natural fatigue. As far as I can make out Chignole is saturated with discontent at his own inability to feel at home in the middle class into which the hazard of war has thrown him, he outgrows his pallid little Paris sweetheart, and his unquiet and immature soul mildly yearning for death.

When I think that in France even pornographic rubbish must comply with a certain standard of diction and construction, and that quite a high one, I am convinced that the original must be incomparably better than this lamentable English version. At a shilling or so in more modest form, it would be well enough as a refuge while the band on the sea front is playing the Barcarolle or the Bee's Wedding. At seven and six—well! well! I leave it with you.—R. H. B.

"The Flying Poilu." By Marcel Nadaud (Hodder and Stoughton. 7s. 6d.)

[And the amount and beautiful quality of the paper wasted on the rubbish inside is enough to make anyone weep who cannot even get moderately decent paper for books of real national importance.—Ed.]

TAILS UP.

I suppose you never belonged to one of those refined little circles that deal in intellectual uplift? You do not know what you have missed.

There was one once—we used to sit on spindle-legged chairs and read each other bits from Dante. Came a time when one member, a clergyman, gave a lecture on his travels in the Holy Land (with lantern slides).

About then it was that three of us decided to shoot a little of the breath of life into the proceedings. There was a man named Barstow (a lean, latter-day Whistler), a merry woman named Fish possessed of many devils, and myself. We decided to cook up a musical tradition for an obscure African tribe, the Shangaans. Having heard one of their melodies in the cotton fields on the East coast I helped lots (with a mouth-organ). We used the air as a substratum of fact, and turned to the melodies of Williams and Walker, the vaudeville team, two tuneful coons with smiles like the opening of a piano-lid. (I must tell you that all this took place in America.)

The head of the society was a little fork-bearded man named Willoughby. He used to wander about the streets absently reading Pausanias in the original, and getting butted by trams. We knew he had never heard any music that was not written by Bach, or—who is the other indigestible composer? Haydn, thank you.

I faked the scenario, with lots of "White Man's grave," and strugglings towards the light of the savage soul. Barstow had a fine baritone voice, and we wrote him some words, all about eating mealies in the moonlight and assegai blades and café-au-lait maidens. Mrs. Fish, in the intervals of helpless tears, played our accompaniments (which were straight Williams and Walker) at the rehearsals. We knew jolly well that everybody in the room but Jimmy Willoughby the cultured would recognise them. It cost us a lot of trouble.

On the night I gave the lecture, little bits at a time. We interspersed it with the musical illustrations, which I expounded gravely. The wording was a bit indelicate in spots, but that was the untutored savage, of course. The audience, a really select coterie, in evening dress, was rather prostrated. Some one must have told James, for he came up to the three of us a little later, and—"Sly wags!" said he. I am rather afraid that it broke up the society.

And, you know, I think that Mr. Edgar Middleton has availed himself of not dissimilar methods in compiling his newest book: "Tails Up" (Simpkin, Marshall, Hamilton, Kent & Co., 6s. to the unwary).

He opens with a manly apology for writing it: "Ill befits a humble pen, etc., etc." but if you deleted all the matter which he has—er, coveted, his tale would be no longer than that of the Wise Men of Gotham

There really ought to be some limit set to the enterprise of publishers. Only yesterday I tried to get "Naval Occasions," and found that net price had crept coyly up from one shilling to five. I know all about the shortage of paper, but I won't have that nice little public that provides me with player-pianos and undistinguishable-from-Corona cigars paying six shillings for the secretarial effort under consideration without protest. I could have been almost nice to Mr. Middleton at a shilling or less. But six shillings makes me vitriolic.

Among other subjects, the book touches on the tradition of the service, the work of some of the better known V.C.s., and the work and development of the Royal Flying Corps in the early days. With a conscientious regularity the writer reminds us that the feats he relates "dwarf the Odyssey of Homer to insignificance." That may well be, but they gain nothing by being related in trite phraseology, commingled with such curious English as: "the aeroplane had continued her *volition*, for almost two hundred miles, by inherent stability." As for the chapter on the work of the aces, I had sooner my heroes were unsung than thus banally belauded.

The book may do for the uncritical lay reader, but it offers nothing either new or worthy to the informed.—R. H. B.

MAGNETIC MEASUREMENTS.

I thoroughly enjoyed a revue the other day. Though neither English nor French, it was an up-to-the-minute production, and went with a bang from the opening lines, when the tired porter who is toting the baggage of his master (a local divinity) through a suspiciously familiar region, which I think was Hades, says:—"Sir, shall I say one of the regular things that people in a theatre always laugh at?"—to the quaint and unanticipated flirt of humour at the very end.

The usual prods were administered to an after-dinner audience, delighted at having its little weaknesses played upon, and there was plenty of gagging with a prominent clergyman in the front row of the stalls. Doubtless, as a compliment to our Western Allies, the chorus gave the Harvard College yell, putting an unqualified "zip" into it:—

Co-äx, co-äx, co-äx,
Brekekekex co-äx,
Don't sing any more;
I begin to be sore!
Brekekekex co-äx!

The parodies were delightful, though rather more literary than is usual.

The name? Oh, "The Frogs." It was written by a Mister Aristophanes, a matter of two thousand years ago.

Which merely goes to prove that there is nothing new under the sun, unless it is the book before me now: "Magnetic Measurements and Experiments," by Mr. A. Risdon Palmer, B.Sc., B.A. (Thomas Murby and Co., 1s. 6d.). Though perhaps Gorgias and Thrasymachos (scientific gentlemen at whom a lot of fun is poked in the play mentioned above) knew something about it.

The book bristles with such questions as:—

"If the intensity of the earth's horizontal component force be 0.16 gauss and a magnet placed in the A position 40 cms. from a needle produces 20.5 deg. deflection, calculate the magnetic moment of the magnet."

This, of course, is *too* easy. Chesterton says in his "Defence of Useful Information," that "the really extraordinary thing is that the most appalling fictions are apparently not so popular as that literature which deals with the most undisputed and depressing facts."

That being granted, I am sure that a wide circulation in circles where such things are relished will be assured to this book, which treats with an appalling certitude of such matters as Coulombs Law, Magnetic Fields, Intensity on the Axis of a Magnet, and the Tangent Positions of Gauss.

By the way, answers to the questions are provided.—R. H. B.

AIRY NOTHINGS.

Captain H. Barber has written an unpretentious little volume of aeronautical sketches which he calls, appropriately enough, "Airy Nothings." (McBride, Nast & Co., Ltd. 3s. 6d.).

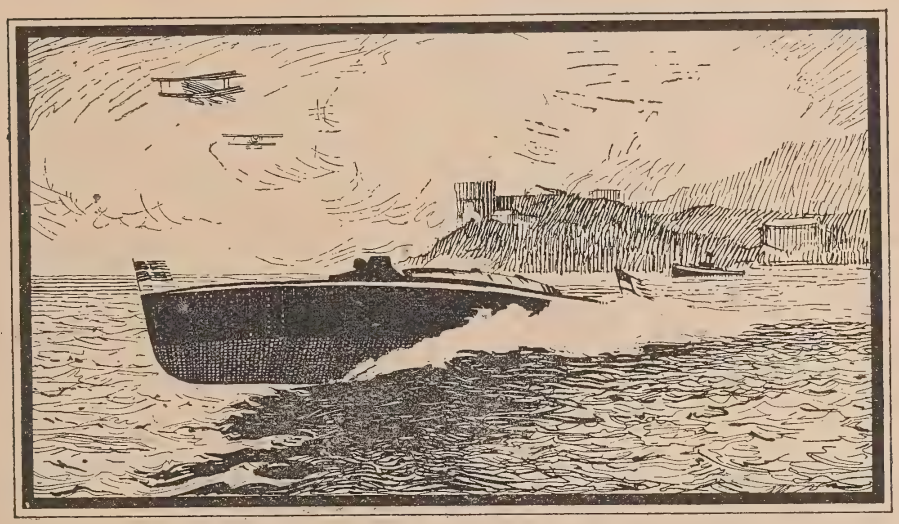
The longest of these, "Dream or True Vision," is an endeavour to prognosticate the future, when machines of illimitable power shall fly at altitudes hitherto undreamed of. "All in the Day's Work" is a tiny trilogy, which describes in turn a pioneer's crash in the brave days of old, with its ugly consequences; the experiences of an A.M. with a bomb that gets jammed in a patent chute in mid-air; and a youngster's rather hefty piece of work in the way of bringing down a Zeppelin. We have the author's word for it that all these episodes are "carefully camouflaged fact."

"The Reflections of an Earth Worm" is a sufficiently faithful presentment of the attitude of the Man-in-the-Street towards things aeronautical. "Ballooning" is an essay at poetical prose writing, and the volume concludes with a "Rhapsody" said to have been "inspired by the memory of the late Wilbur Wright."

It occurs to me that the book is highly priced, and would be more attractive at 1s. 6d. or 2s. And, personally, I prefer my Kipling undiluted.—R. H. B.

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A REPORT ON THE HALBERSTADT TWO-SEATER FIGHTER.

The following Report on the Halberstadt Biplane is published by the kind permission of the Technical Department of the Air Ministry, to whom the thanks of the Editor are due.

This machine is a two-seater fighter. It was brought down at Villers Bocage, by Lts. Armstrong and Mert on an R.E.8 on 9/6/18. The machine is marked "Type H.S. C.L.2," and bears the military number C.L.2, 15,342/17. The date of construction, 1/4/18, is stamped on various parts. On the side of the fuselage is the following inscription:—

Leergewicht (weight unladen), 796 k.g.
Nochstbelastung (useful weight), 370 k.g.
Einschl Vollen Tank. (Including full tanks.)

There is also a red line about 30 inches long drawn at both sides of the fuselage, showing the horizontal in the normal flying position.

General Details.

The Halberstadt represents, in all probability, the high water mark of two-seater German aeroplane construction, as it is not only well and strongly constructed, but its general behaviour in the air is good according to modern fighting standards.

Its general design will be gathered from the drawings at the end of this report and also from the photographs. Constructional details are dealt with by sketches.

Span of upper plane	35 ft. 3¼ in.
Span of lower plane	34 ft 11 in.
Chord of upper plane	5 ft 3¼ in.
Chord of lower plane	4 ft. 3½ in.
Gap, maximum	4 ft.
Gap, minimum	3 ft. 8½ in.
Dihedral angle of lower plane	2°
Horizontal dihedral of main planes	4°
Total area of main planes	310 sq. ft.
Area of each aileron	11.6 sq. ft.
Area of aileron balance	2.0 sq. ft.
Load per square foot	8.2 lbs.
Area of tail planes	13.6 sq. ft.
Area of elevator	12.4 sq. ft.
Area of fin	6.4 sq. ft.
Area of rudder	7.9 sq. ft.
Area of rudder balance	1.0 sq. ft.
Maximum cross section of body	8.8 sq. ft.
Horizontal area of body	44.0 sq. ft.
Vertical area of body	52.8 sq. ft
Length over all	24 ft.
Engine	180 h.p. Mercédès
Weight per H.P. (180)	14.07 lbs
Capacity of petrol tanks	34 gallons
Capacity of oil tanks	4 gallons
Crew	Two
Guns	1 fixed and 1 movable
Military load on test	545 lbs.
Total load on test	2,532 lbs.

Performance.

Speed at 10,000 ft., 97 m.p.h., 1,385 r.p.m.

	Mins.	Sec.	Rate of Climb in Ft./Min.	Indicated Air Speed.
Climb to 5,000 ft.	9	25	440	69
Climb to 10,000 ft.	24	30	240	64
Climb to 14,000 ft.	51	55	80	58

Service ceiling (height at which climb is 100 feet per minute), 13,500 feet.

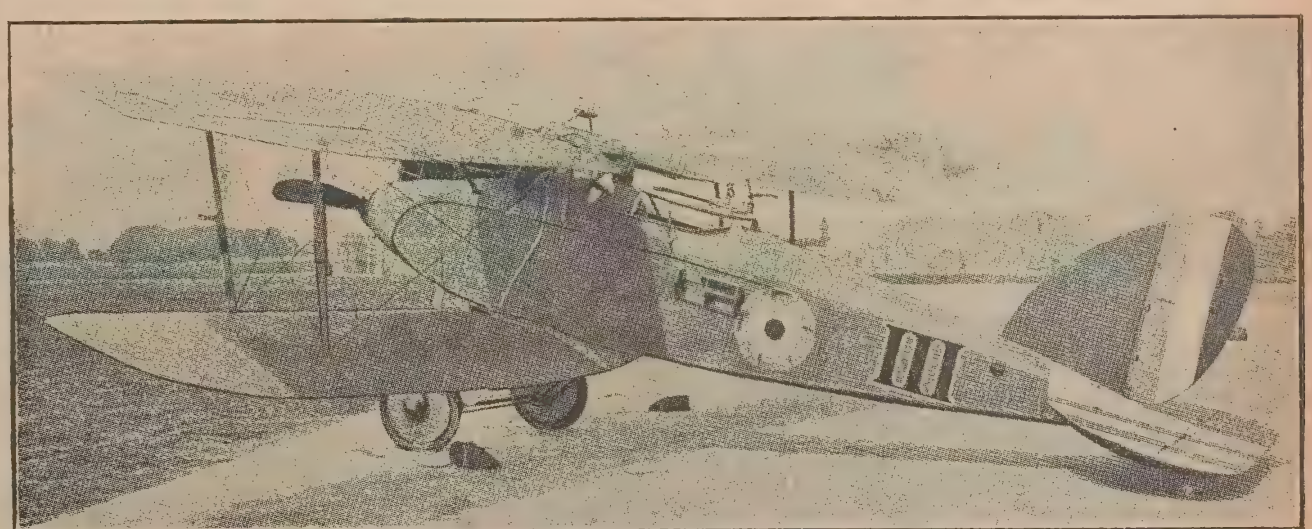
Estimated absolute ceiling, 16,000 feet.

Greatest height reached, 14,800 feet in 64 minutes 40 seconds.

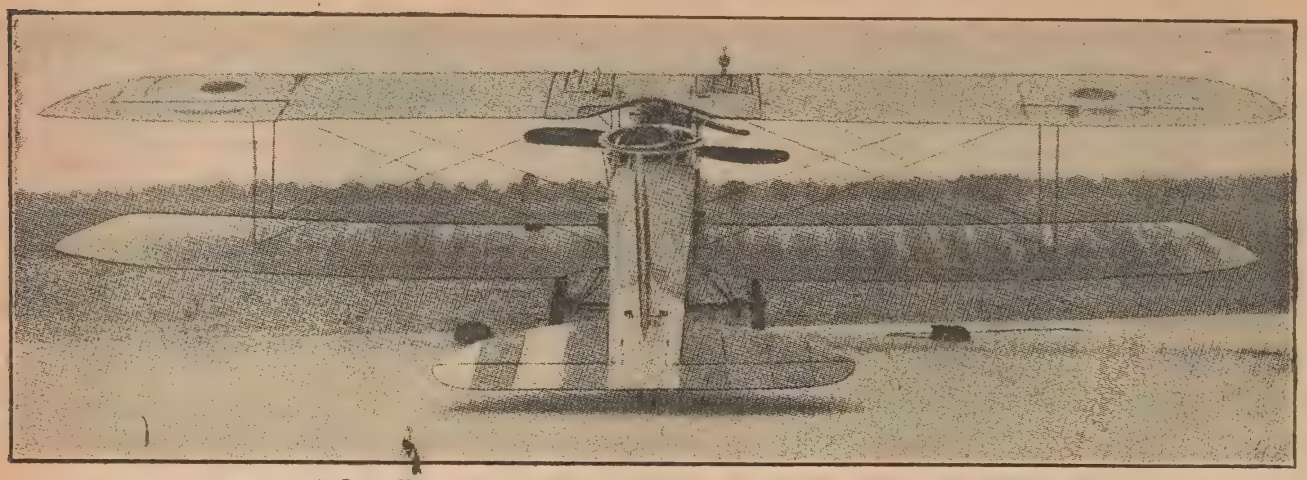
Rate of climb at this height, 50 feet per minute.

Stability and Controllability.

This machine cannot be considered stable. There is a tendency to stall with the engine on, and to dive with the engine off.



A General View of the Two-seater Halberstadt Fighter.



A Rear View of the Halberstadt Fighter showing tail plane arrangement.

Directionally, owing to the propeller swirl, the machine swings to the left, but with the engine off is neutral.

Pilots report the machine light and comfortable to fly. The manœuvrability is good, and this feature, taken in conjunction with the exceptionally fine view of the pilot and observer and the field of fire of the latter, makes the machine one to be reckoned with as a "two-seater fighter," although the climb and speed performances are poor judged by contemporary British standards.

PRINCIPAL POINTS OF THE DESIGN.

Single bay arrangements of wings.
Conspicuous set back of the main planes.
Empennage free from wires.
Fuselage tapers to a horizontal line at the rear in direct contra-distinction to the usual German practice.
Pilot's and observer's cock-pit constructed as one.

CONSTRUCTION.

WINGS.

The upper wings are supported by a large centre section having a span of 6 ft. 3 in. This centre section is at right angles to the centre line of machine, but at each side of it; the wings are thrown back with a horizontal dihedral of 4 degrees. The lower wings are smaller in chord and very slightly smaller in the span than the upper, and are fixed direct to the lower surface of the fuselage, and it is to be noted that where the trailing edge joins on to the fuselage it is shaped so as to avoid a surface of discontinuity at the root of the wing. This is done by smoothly turning upwards the trailing edge.

The actual construction of the wings is of considerable interest, especially on account of the novel type of spar which is employed. This applies to both the upper and the lower planes. The front spar measures 2¾ inches by 1 inch and at the butt is placed about 4 inches from the leading edge. It is of "I" section, but is left full at such points as those at which internal bracing wires are fixed. A section of this spar, given in Fig. 1, shows how it is connected to the leading edge by means of ply-wood, both top and bottom.

It will be seen that on the upper surface the ply-wood is extended rearwards for a distance of some 4⅜ inches from the centre of the spar, and terminates in a small transverse flange about ½-inch deep. This construction furnishes a leading edge of great rigidity and strength, and at the same time it would also appear to be light in weight.

A section of the rear main spar is given in Fig. 2. In this case the main member is of "O" or box section, and is built

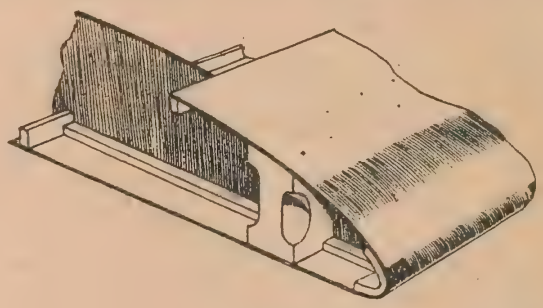


Fig. 1.

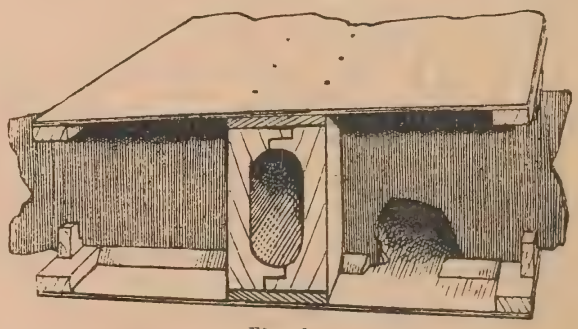
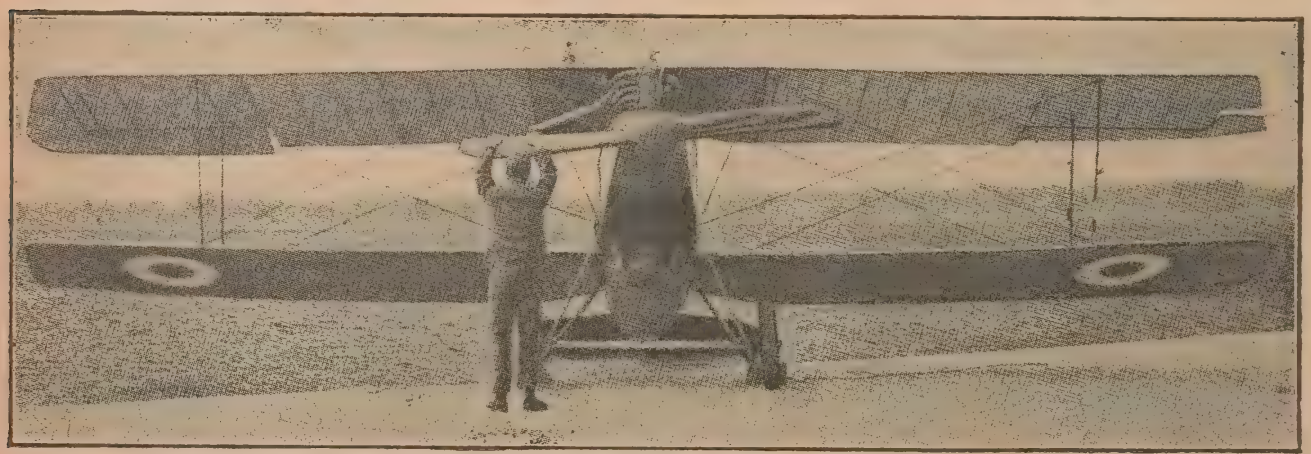


Fig. 2.

up of two pieces let into one another in a rather unusual manner. This is clearly shown in the drawing. Both at the top and bottom of the spar, thin strips of wood are used to cover the glued joint, and on this is tacked, both above and below, a flat length of plywood 7 inches wide which overhangs the main member of the spar an equal distance at each side.



A Front View of the Halberstadt Fighter.

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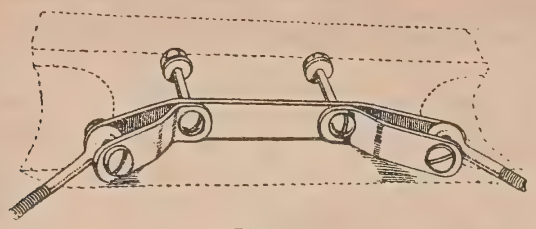


Fig. 4.

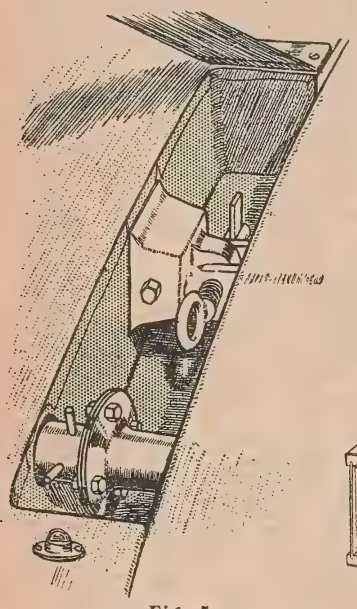


Fig. 5.

This ply-wood web is flanged at each end with strips of wood glued in position, and on these strips are fitted small corner pieces which serve to support the ribs. The latter are also of ply-wood, to which are glued and tacked rails of solid wood, top and bottom.

A notable point of the wing construction is the fact that steel tubes are not used as the compression members of the internal bracing, as is the common practice. These members are made of box form ribs which occur at intervals along the spars. Adjacent to the root of the wing a very large reinforced box rib occurs, of which the section is given in Fig. 3.

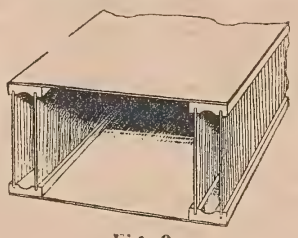


Fig. 3.

The absence of steel tubes considerably simplifies the attachment of the bracing lugs to the spars, a specimen of which is shown in Fig 4. It will be noticed that it is of a very simple form, and in this respect it is characteristic of the design of the aeroplane on the whole, which, from this point of view, is far less elaborate than the majority of German designs and appears to be in many ways more practical, especially having regard to quantity production.

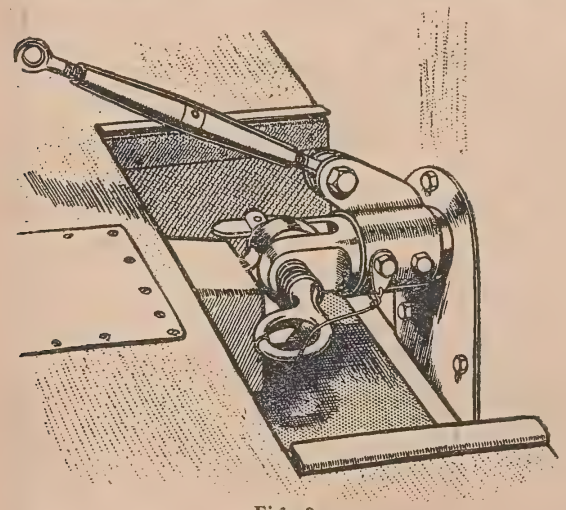


Fig. 6.

Wing Attachments.

The whole of the centre section, both upper and lower surface, is covered with three-ply wood and the spars used in it are of similar design to those fitted to the wings, and already described. Both the upper and lower wings are provided with attachments which allow of their being very readily taken down. Views of these fittings are given in Figs. 5 and 6, the former showing the attachment of the upper wing to the centre section, and the latter that of the lower wing to the fuselage. In the former case, the fitting is covered in with a spring operated trap door which also gives access to the joint of the aileron control shaft. A sliding door is used in the lower plane, and it will be noticed that the spar is at this point protected by an aluminium foot plate. In each case, quick detachable safety bolts are employed. In Fig. 7 are given further details of the type of spar socket in use. This is built up of sheet steel and oxy-acetylene welded, the quality of this work appearing to be very high.

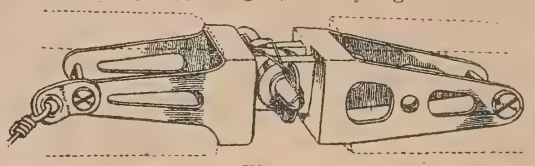


Fig. 7.

The spars of the lower wings engage with a fork-ended tube passing right across the floor of the fuselage, and supported by the longerons of the nacelle by means of the sockets as shown in detail in Fig. 8. Here again a high quality of workmanship is evident, and it may be said without exaggeration that in this respect the Halberstadt machine is decidedly superior to the other German aeroplanes which have been reported upon, with, perhaps, the single exception of the Fokker.

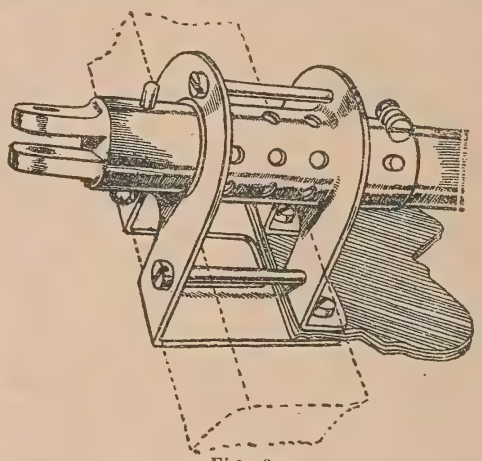


Fig. 8.

Struts.

The struts throughout this aeroplane are of streamline steel tube of light section, but in contradistinction to the usual German practice they are not tapered at the ends, but end abruptly, as shown in Fig. 9. This form of construction has the advantage of lending itself very well to the saving of labour, as the aeroplane struts are simply lengths of plain tubing pierced with transverse holes and reinforced by welded shoulders where the latter occur. The struts are secured top and bottom by bolts and eyes, and it will be noticed that where a cross bracing wire has to be taken from this junction, the turnbuckle is neatly anchored to a small pin passing through the rear of the tubular strut, which is slotted and slightly expanded at this point.

The bolt hole is also reinforced by spot welding. This arrangement of strut attachment appears to be very practicable and certainly looks extremely neat.

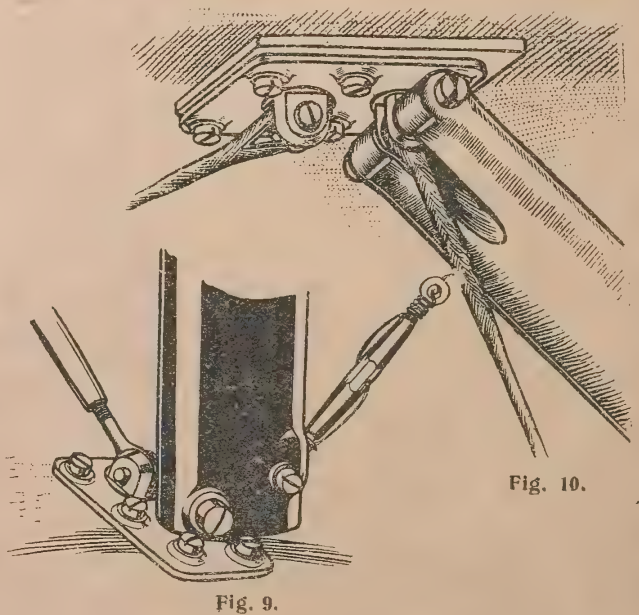


Fig. 10.

Fig. 9.

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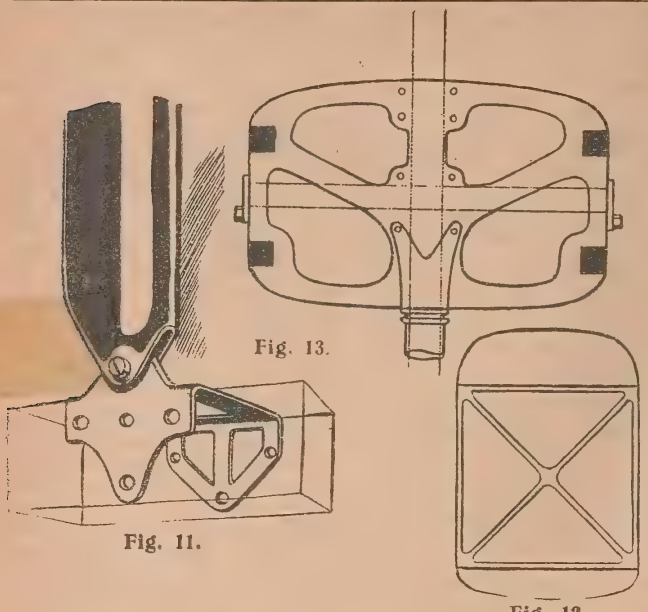


Fig. 11.

Fig. 12.

The upper ends of the inclined centre section struts are fitted with a different type of anchorage, as in this position the simple form of attachment used on the interplane struts cannot be adopted. A sketch is given in Fig. 10, from which it will be seen that the end of the strut is welded up solid and fitted with a scooped out slot for the reception of the diagonal wire which runs to the bottom of the fuselage. This wire is very neatly secured by the same bolt as fixes the centre section strut.

The rear spar of the centre section is supported by two vertical struts of the "V" type having their base points attached to the upper members of the fuselage and the apex fixed to the centre section spar. The manner in which the lower joints are fitted to the fuselage brackets and the form of the latter are made clear in Fig. 11.

The bracing wires run as follows:—In the rear between the extremities of the struts; the lift wire in front joins the top of the forward strut to the landing carriage strut. There are no drift wires outside the wings.

Fuselage Construction.

One of the most notable points in the Halberstadt fuselage is that whilst it retains the characteristic German form, both forward and amidships, it shows great individuality at the tail, at which point it tapers to a horizontal line, instead of to a vertical line, as is the practice in nearly all other German aeroplanes. The advantage of this arrangement is that the fitting of the tail can be made of sufficient strength without introducing any need for wire bracing. Thus, apart from head resistance, it has less masking effect on the movable gun.

The fuselage is constructed in the accepted manner of four main longerons fitted with skeleton bulk heads at intervals and covered in with three-plywood. The bulk heads are made as shown in Fig. 12, and are of a very light construction, except that adjacent to the tail, which serves as the main support of the rudder post and tail plane spar. At this point the bulk-head is made of multi-plywood, and is extensively fretted, as shown in the sketch, Fig. 13. Slots are cut for the reception of the longerons. The rudder post is fixed to the bulk head by sheet steel brackets.

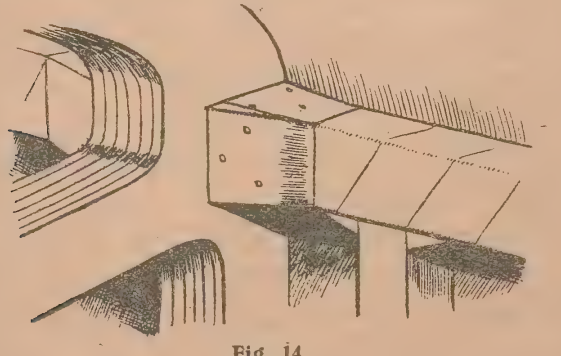


Fig. 14.

The sketch, Fig. 14, shows in more detail the fitting of the longerons to this bulk head, and it will be noticed that wedge-shaped filling pieces are used, and also that the longeron itself is wrapped with fabric throughout its length. Immediately in front of this tail bulk head, and at each side of the fuselage, a small vertical wooden member is dropped from the upper longeron. This, together with the bulkhead, serves to support the bracket which carries the leading edge of the fixed tail planes. This will be referred to later.

Another notable feature of the fuselage is the fact that the pilot's and gunner's cockpits are made in one without apparently introducing any weakness into the construction. This scheme has the advantage of permitting the pilot and passenger to sit very close together, so that the length of the fuselage is reduced. The two cockpits, whilst to all intents and purposes in one, are actually separated by a cross-piece, which is used as a tray for the convenience of the observer. It is, however, probable that the primary object of this cross-piece is to perform a constructional function.

The gun ring does not, as in the usual design, form an integral part of the fuselage coaming, but is fitted thereto by brackets.

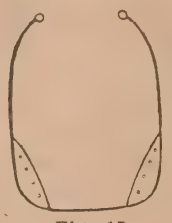


Fig. 15.

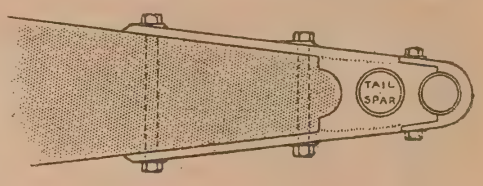


Fig. 16.

Inside the observer's cockpit, the fuselage is reinforced, between the floor and the sides, by slightly curved panels, as shown in the sectional sketch, Fig. 15. In the space formed by these panels, run the control wires which are thus out of the way and cannot accidentally be interfered with by the observer.

Empennage.

As is shown in the general arrangement drawings, the empennage consists of curvilinear fin with balanced rudder, and a semi-circular tail plane to which is hinged a single elevator. As has already been noticed in the description of the fuselage construction, the mounting of these tail planes is carried out without the use of any external wiring or cross bracing. The fixed tail planes are built up of steel tubes, and have a section curved both top and bottom. The rear spar, which acts as part of the hinge of the elevator, is carried in a pair of built-up welded steel brackets, which form the end piece of the fuselage, as shown in Fig. 16. The front spar, which is slightly in the rear of the leading edge is capable of being adjusted when the machine is on the ground, so as to vary the angle of incidence of the tail planes. The adjustable clip for this purpose is shown in Fig. 17, and gives a choice of four positions. The built-up steel brackets which form this attachment are carried, one on the rear-most bulk head, shown in Fig. 13, and the other on the small vertical strut, noted in Fig. 14

The method of construction of the fin and rudder is shown in Figs. 18 and 19. The same principle is adopted for the tail planes and elevator. It will be seen that it is a combination of wood and steel construction. The ribs of the fin, which is curved in section, and has a rounded leading edge, consist of thin tubes, 8 mms. in diameter, welded to the leading spar, and taken back to the rudder post at a slight angle to each other.

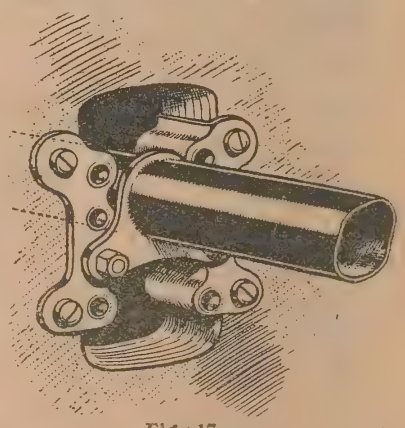


Fig. 17.

This staggering of the tubes gives the rib the thickness of a single tube only at the trailing edge. They are reinforced with diagonal tubes of 5 mms. in diameter. The leading edge is formed by a covering of thin three-plywood supported by a light wooden frame work, the form of which is indicated in Fig. 19.

Ailerons.

The ailerons are of the balanced type, and are fitted on the upper plane only. They are furnished with the usual welded steel frame work, and are very light in weight. Their method of operation differs from that found on any other German design. The aileron front spar, which is hinged to the rear spar of the wings, is continued inwards by means of a tubular steel extension until it reaches a point level with the side of the fuselage. Here the extension of the shaft terminates in a crank, which is operated direct by the "T" shaped control lever through the medium of vertical steel rods.


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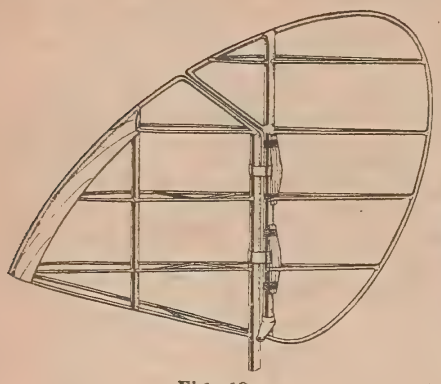


Fig. 18.

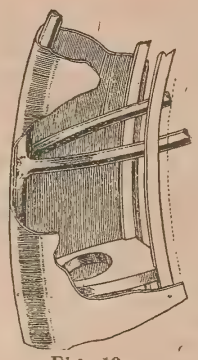
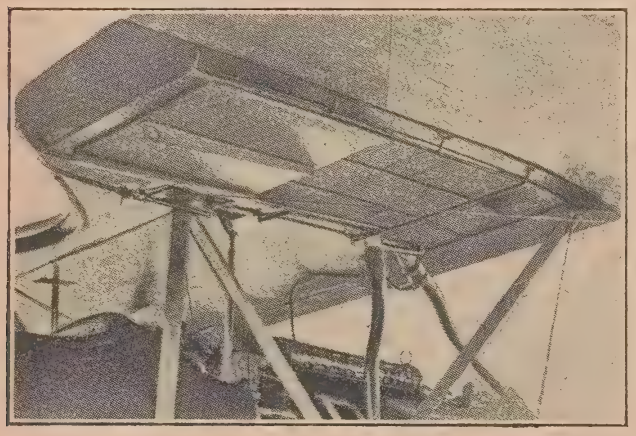


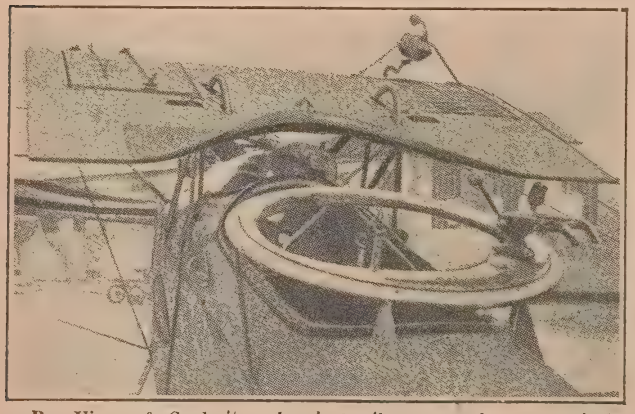
Fig. 19.

The arrangement of these ailerons and their levers may be gathered from the photographs, Nos. A and B. Fig. 5 shows how the aileron operating shafts are split and provided with bolted flanges whereby that end of the shaft which is carried in the centre section of the upper plane may be easily detached from the portion which is housed in the wing. Figs. 20 and 21 illustrate details of the attachments of the aileron shaft to the aileron itself. The bearings of the shaft consist of a flanged plate at each end, as shown in the drawing, Fig. 20. On the inner side is a coupling which unites the front spar of the aileron to



A.—View of Centre Section, showing radiator and shutter, machine gun, and cabane struts.

the operating shaft. Each of these members terminates in a semi-circular driving dog, and the two are united by a clamped sleeve which is also fitted with a locating cotter pin. This allows the aileron as a whole to be removed very readily in case of need. The tips of the ailerons are turned up at their extremities so as to present, when the controls of the machine are in their normal position, a slightly negative angle to the relative wind. This is in conformity with the usual German practice.



B.—View of Cockpits, showing aileron cranks, gun ring, radiator and gravity petrol tank.

Control.

A sketch of the control gear is given in Fig. 22. It is, in general, of the usual type, and the lever is fitted with a locking device, whereby the incidence of the elevator can be fixed when desired. This consists of a light telescopic tube arranged diagonally and fitted with a clamp, operated by a thumb screw.

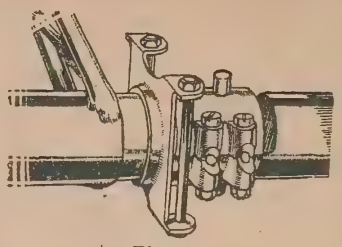


Fig. 20.

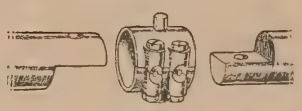


Fig. 21.

The control lever is fitted with an "L" shaped extension at its base, which is pivoted to a long crank bar. This is fitted with bell cranks at each end, and is carried in bearings mounted in the sides of the fuselage in such a manner that the bottom end of the lever is coincident with the centre line of the pivot bearings. As shown in the sketch, the control lever has a "T" piece attached to its foot, which is coupled up through universal links to rods, which extend vertically to the aileron cranks. The ailerons are thus worked entirely positively, and without any cables and pulleys.

Mounted at the head of the control levers, are two triggers for

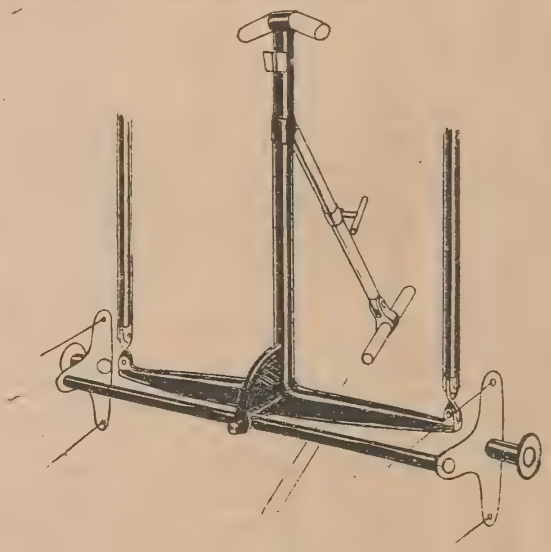


Fig. 22.

operating the fixed machine guns for which accommodation is provided, though only one was actually found on the aeroplane.

The rudder is controlled by a built up foot bar with the usual heel rests. This is carried in a pivot mounted on a light steel tube fixed across the fuselage longerons. Below this tube the rudder bar pivot carries a grooved pulley of large diameter, over which the rudder wire is passed. It is then taken over pulleys at each side, and down the fuselage to the cranks at the rudder post.

It is worthy of note that whilst none of these controls are duplicated, the elevator cranks are fitted with two sets of bolt holes, so that the leverage can be adjusted if necessary.

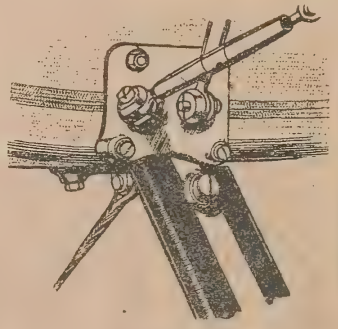


Fig. 23.

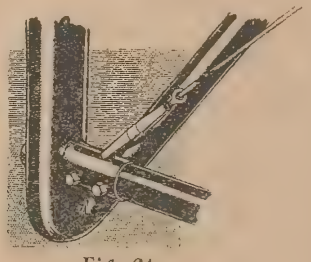


Fig. 24.

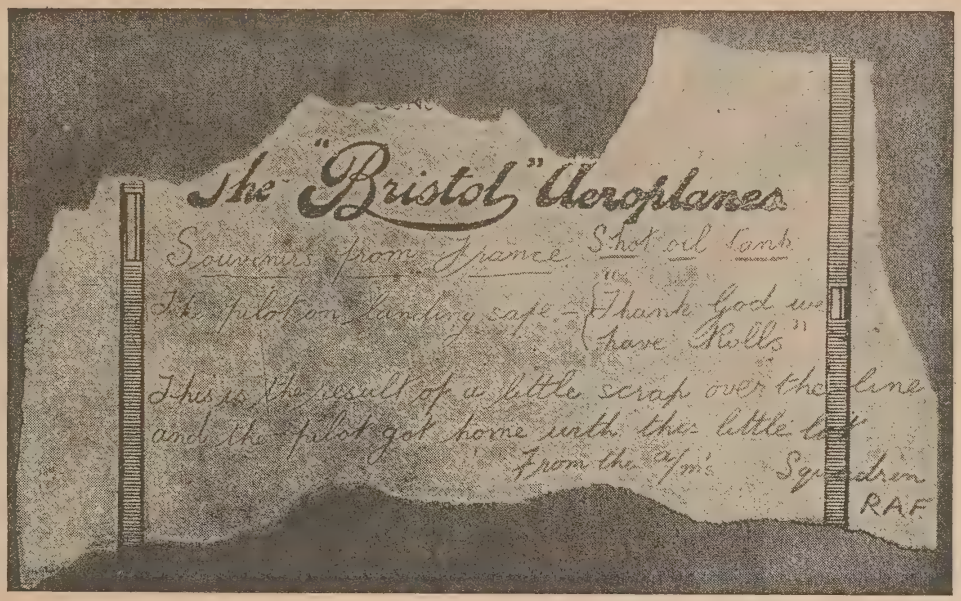
Undercarriage.

The undercarriage consists of a steel axle, fitted with 760 by 100 wheels. The axle is supported from a pair of tubular steel struts at either side by means of triple steel coil spring shock absorbers. The upper attachment of the undercarriage struts is shown in Fig. 23, which illustrates the form of bracket carried on the outside of the fuselage, and bolted to one of the forward bulk heads. The struts are reinforced for the reception of the bolts

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in a manner similar to that described for the interplane struts. At their bottom end, the struts are welded together into the form shown in Fig. 24, and they are also reinforced by a fixed axle or tie-rod, the sockets of which are slotted for the reception of the turnbuckles of the cross-bracing wires.

The undercarriage design is considerably neater than that found on the general run of German aeroplanes, and appears to be both strong and light.

Tail Skid.

A view of the tail skid is given in Fig. 25, and it will be seen that this possesses one or two features of interest.

The skid itself is of ash, reinforced with a light built-up sheet steel shoe. The forward end projects through a hole in the fuselage, and is fitted with the usual shock absorber device which is fastened to the rear-most bulk head.

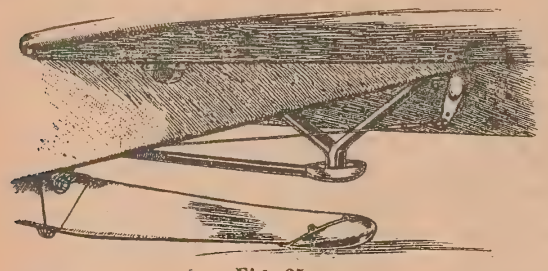


Fig. 25.

The tail skid is pivoted to an extension of the rudder post, and though it is capable of swinging slightly from side to side, is not actually steerable. Immediately above the shoe of the tail skid is a second steel shoe, shaped like a spoon, which is rigidly supported by a pyramid of steel tubes. The object of this is to prevent any possibility of the elevator cranks coming into contact with the ground, even should the tail strike the earth sufficiently hard to carry the tail skid shock absorber to its limit of extension.

Engine.

The engine is a high-compression 160 h.p. Mercédès (commonly known as 180 h.p.), and is of standard type. This engine has been fully described in Handbook No. 805.

Engine Mounting.

The engine bearers are of wood, and are directly supported by bulk heads in the forward part of the fuselage.

Petrol Tanks.

There are two tanks for petrol. The main supply is carried under the pilot's seat, and has a capacity of 24 gallons. This is fed to the carburetters under air pressure, and the usual hand and engine pumps are employed.

The second tank is let into the upper surface of the centre section of the top plane, and is clearly shown in photograph B. This contains eight gallons, and is fitted with a glass tube, lying parallel to the upper curvature of the plane, by which the pilot can readily see the level of the fuel. This gravity tank can be filled from the main tank by means of a semi-rotary hand pump.

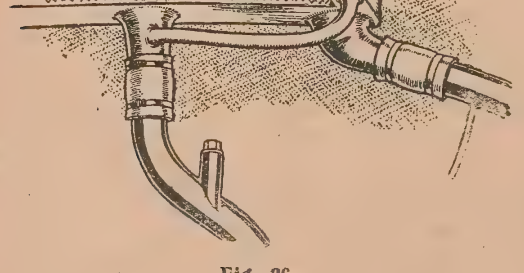


Fig. 26.

Radiator.

The radiator is of the type which is becoming more and more adopted by German designers, namely, that which is embodied in the upper plane surface. In this case the radiator forms part of the right hand side of the centre section. It is fitted with a small subsidiary water tank, details of which are shown in Fig. 27, which is provided with a trumpet nozzle pointing forward. Details of the radiator shutter are given in the photograph No. A. Provision is made for the fitting of a water circulation thermometer, but this instrument was not actually found on the machine. The radiator shutter consists of a sliding panel of sheet steel mounted on a light tubular framework forming rails. This is within easy reach of the pilot, and can easily be slid forward or backward when it retains its position by reason of the lift effect upon it, and the friction between the guides and the rails.

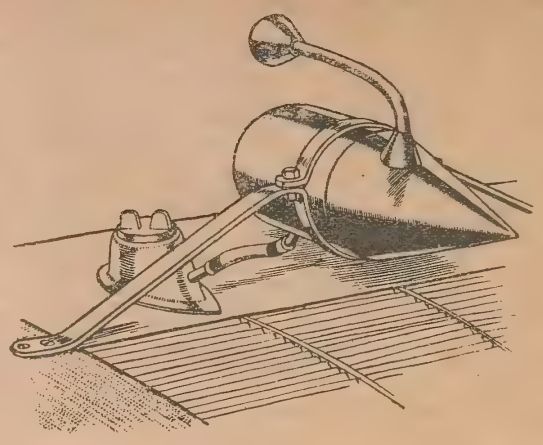


Fig. 27.

As shown in sketch, Fig. 26, the inlet and outlet pipes of the radiator are both fitted at its left hand front corner, the radiator being furnished with internal baffles, which promote complete circulation of water through all the tubes. In order to prevent the possibility of an air-lock forming, a small tube is led from the outlet pipe through the bottom of the radiator tank, and is brought close to the bottom side of its top surface. If air should accumulate in the forward and upper part of the radiator, this tube would quickly allow the lock to be dissipated.

The sketch, Fig. 26, shows the adapter for the radiator thermometer in the outlet pipe. From the inlet pipe, a small branch is taken off for the carburettor jacket, and from the rear end of the radiator, a pipe provided with a cock, by which the tank can be emptied, is led to the trailing edge of the upper plane.

Oil.

A supply of five gallons of oil is carried in a small tank fitted at the side of the engine. The latter is furnished with a pump, which, while circulating the lubricating oil contained in the tank, draws a small supply of fresh oil from the tank at every stroke.

Propeller.

The screw is of the usual built-up type, and consists of eight laminations of woods in the following order:—

Ash, ash, mahogany, ash, mahogany, ash, mahogany, ash.

It has a diameter of 2.4 metres and a pitch of 2 metres and was built at the Luckenwalde Propellerwerke, Niendorf. In front of the propeller boss proper is a built-up laminated plate to which a spinner is fixed by means of a girdle of stranded steel cable.

Wireless.

The aeroplane is internally wired to give greater capacity for wireless and accommodation is provided for the aerial and its spool in the observer's cockpit. The wireless dynamo, which also provides current for electrically heating clothing, is driven direct from a pulley on the engine, and is mounted on a bracket carried by the left-hand engine bearers.

The form of this bracket is shown in Fig. 28, which also indicates the manner in which it is adjustable The bracket consists of a flanged and welded sheet steel construction comprising two plates. The upper extremities of these plates are joined by a transverse bolt, on which is hinged a pad against which the foot of the dynamo base is bolted. A similar bolt and pad is furnished at the bottom of the plates, but in this case the bolt is adapted to slide in a guide so that the tension of the belt can be adjusted and the bolt and its pad locked in any position by a thumb-screw.

The dynamo when fitted lies outside the wall of the fuselage at a point level with the rear of the engine, and is then covered in with a bulbous streamline fairing. When the dynamo is not (the whole of the wireless apparatus being installed only when actually required) fitted, this streamline fairing, which is readily detachable, has its place taken by a flat panel which can be discerned at the left-hand side of the fuselage in photograph No. B.

Engine Control.

A throttle lever of the usual ratchet type is fitted at the left-hand side of the pilot's cockpit, the carburettor being fitted with an automatic altitude connection. On the dashboard is a screw-down grease pump, for lubricating the water-pump spindle.

Ignition is controlled by a self-locking lever. The dash-board is completed with the usual instruments—starting magneto, main switch, petrol pressure gauges, oil pressure gauges, air-pump,

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and petrol lever indicator. On the right-hand side of the pilot's seat is a lever controlling the clutch of the wireless dynamo drive.

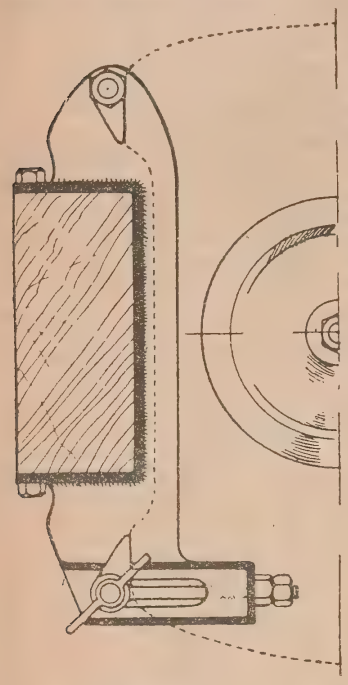


Fig. 28.

Level Indicator.

A level indicator of the type shown in Fig. 29 is fitted on a dash-board. It is of a type not previously found on German aeroplanes. It consists of a pendulum device operating a circular disc, the lower half of which is covered by a semi-circular metal shield. The upper half of the disc is dark in colour, though not quite so dark as the shield, and below its horizontal diameter the swinging disc is painted white, so that if the machine side-slips a white sector becomes visible against a dark background as indicated in the sketch. This instrument appears to be very much better made than the usual indicators fitted to German machines.



Fig. 29.

Gun Mounting.

A notable feature of the Halberstadt machine is the fitting of the gun ring which is not incorporated in the fuselage, but is attached to its top surface by streamline steel struts. In front, it is supported by two converging steel tubes in a form of a "V" which branch from the upper fuselage longerons. The gun ring is thus very rigidly supported. Since the greater part of it is directly in the slip stream of the screw, it is made of very fair streamline section as may be gathered from the photograph No. A, and in general is much lighter and far better constructed than the usual German gun mounting. The accepted type of bracket and locking device is employed. Both portions of the ring are made of wood covered with doped fabric.

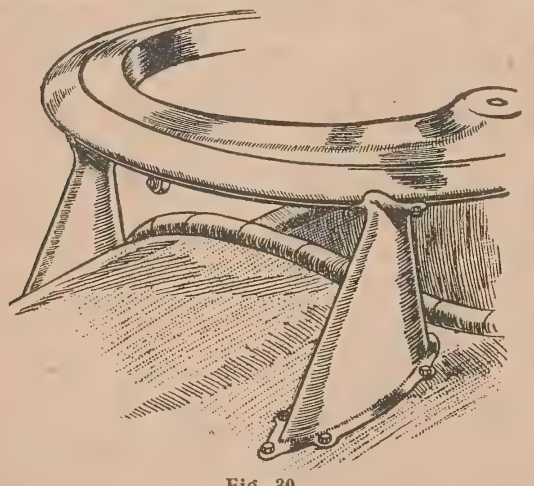


Fig. 30.

Fabric.

The fabric is of the usual quality found on the better class of German aeroplanes. It is dyed with the familiar polygonal camouflaged scheme of colours and is applied to the wings with the warp and weft at an angle of 45 degrees to the spars. The reason for this method of wing covering is not clear. The dope used appears to be good. The body work and also the centre section of the top plane are covered with a scumble of colours arranged in indefinite areas and shading into one another. The colours used are a cloudy yellow, dark and light greens, brown, purple and a light blue. The belly of the fuselage is coloured yellow throughout.

Fittings.

In the floor of the observer's cockpit is a bracket for a camera of one metre or more focal length. Detachable tubes for supporting the upper end of the camera are furnished and for this purpose clips are fitted on the fuselage members. A sliding trap door underneath the camera fitting is provided. Plugs at convenient points are arranged for the electrical heating circuit. The observer's seat is of the folding type, and is placed very low so that when he occupies it the observer is well below the level of the top of the fuselage, and is thus completely hidden from view. The pilot's seat is adjustable fore and aft, and is carried on light built-up cross bars dropped into sockets bolted to the fuselage members. The form of the sockets is shown in Fig. 31.

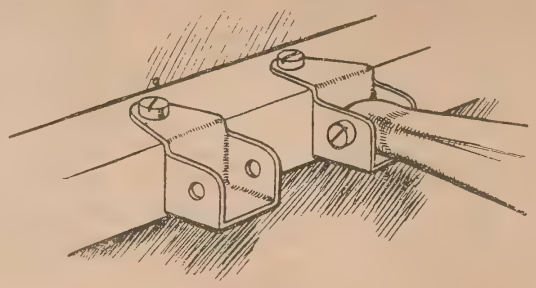


Fig. 31

Compass.

The compass, which is of the usual German pattern, presenting no new features, is fitted in a circular box near the root of the left-hand wing, where it is immediately under the view of the pilot.

Schedule of Principal Weights.

	lbs.	ozs.
Total weight	2532	lbs.
Upper wing, complete with aileron, aileron rod, drag bracing, and strut attachments, but without lift bracing wires and fabric	62	6
Lower wing, as above (no aileron fitted)	52	8
Aileron complete, without fabric	7	12
Aileron bar, with flange	4	0
Interplane strut, front, without bolts	3	3
,, ,, rear, ,, ,,	3	14
Centre section, complete, with radiator and gravity tank, aileron control crank, and bracing wires	101	0
Fixed tail plane (each), with fabric	7	8
Rudder, complete, with fabric	7	8
Elevator, complete, with hinge clips and fabric	12	0
Fin, complete, with fabric	9	6
V centre section strut	2	7
Straight centre section strut	3	2½
Undercarriage, complete, with struts and bracing, wheels, tyres, and shock absorbers	102	0
Shock absorber (multiple coil spring type), each	4	6
Axle, with shock absorber bobbins and caps	14	8
Wheel, with tyre	20	4
Tyre and tube	8	12
Wings, leading spar, per foot run	1	4
Wings, trailing spar, per foot run	0	14½

Historical Note.

The present Halberstadt fighter is a development of the earlier single-seater, an example of which was brought down on 29.10.17. In the latter case ash was used to a fairly large extent, both in the fuselage and wings, but in the more modern design spruce is exclusively adopted. The rear spar was of the ordinary "I" Section type without three-ply reinforcement. The fuselage, of somewhat similar shape, was fabric covered. Balanced elevators and rudder were fitted, but no fixed tail-plane or fin. The arrangement of the centre section, with tank and radiator, was substantially the same. Double bags of interplane struts were adopted, but the struts themselves were of the welded-up tapered pattern. The ailerons were controlled by wires and not, as in the present example, positively. Both planes had the same chord and the upper wings had an overhang. The weight of the complete machine, without pilot, was 1,778 lbs.

Both the Halberstadt machines are at the Enemy Aircraft View Room, Agricultural Hall, Islington, where they may be seen on production of a pass, obtainable from the Controller, Technical Dept., Ap. D.(L.), Pen Corner House, Kingsway. W.C.2.

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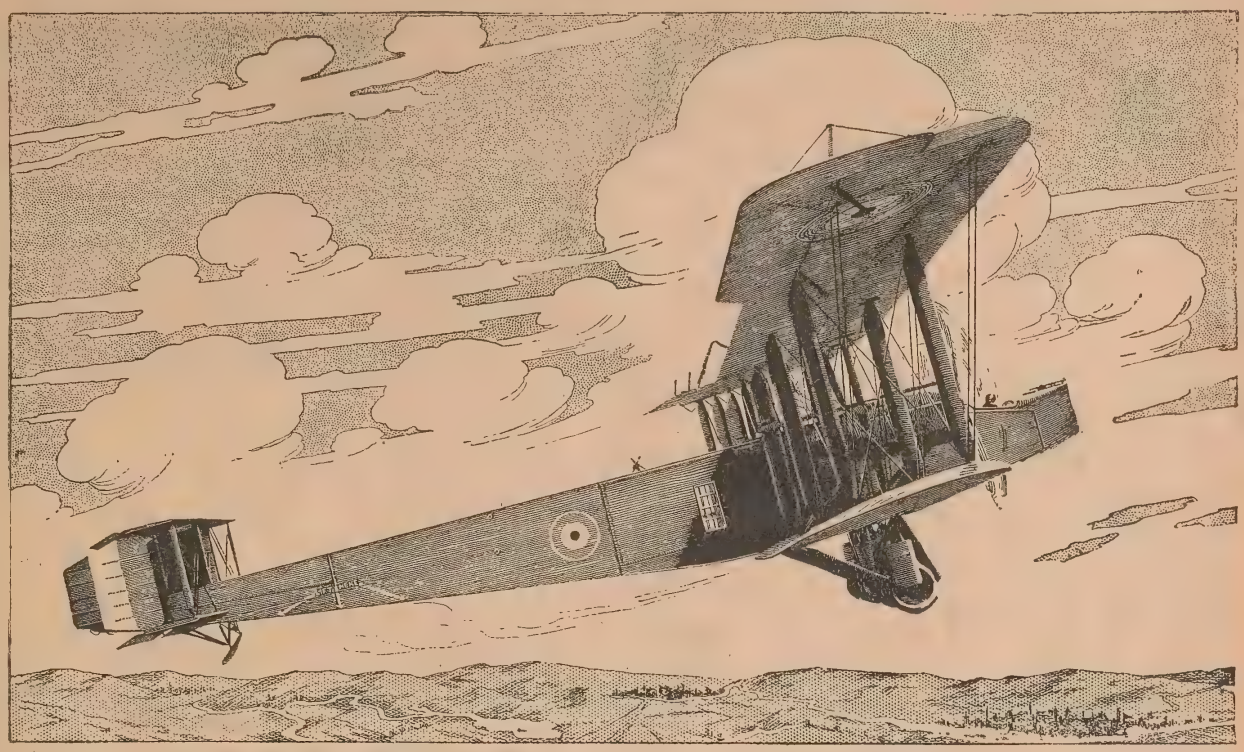
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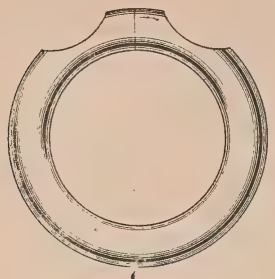


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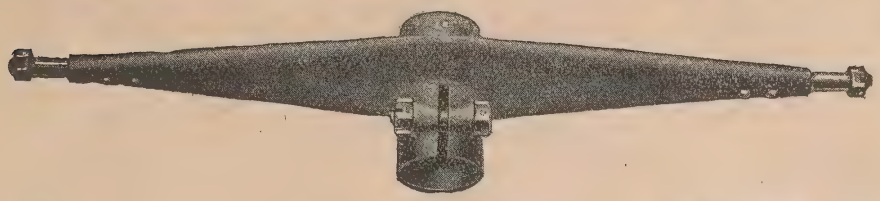
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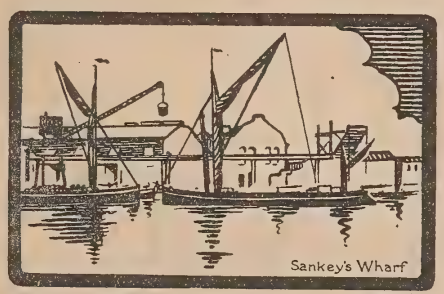
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Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W 10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

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Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast.
Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 793.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1108.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 622.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6342.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Mountford, Fredk., Ltd., Lifford, Birmingham "Fremo, Birmingham" King's Norton 261

Metal Parts and Fittings (continued)
Rubery Owen & Co., Darlaston, South Staffs
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Propellers (continued)—
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
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Rubber Tubing & Accessories—
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Screw-driving Machines—
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Seaplane Manufacturers—
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Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Woolston 37.

Seats for Aeroplanes—
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Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
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Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
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The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

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"The Aeroplane" Buyers' Guide.—*continued.*

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham. Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 406.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent" Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Avenue. 1432. Redditch 61.

Watchmakers and Jewellers—
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Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4810.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
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Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Snatterlys, Piccy, London" Regent 1340.

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
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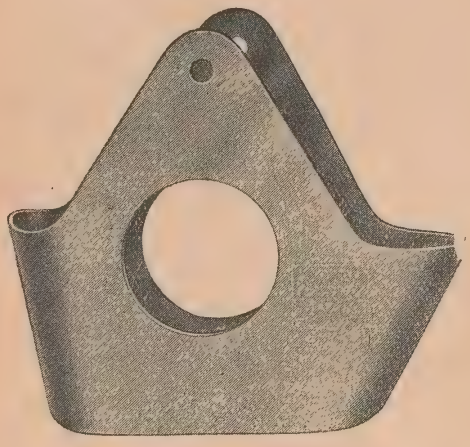
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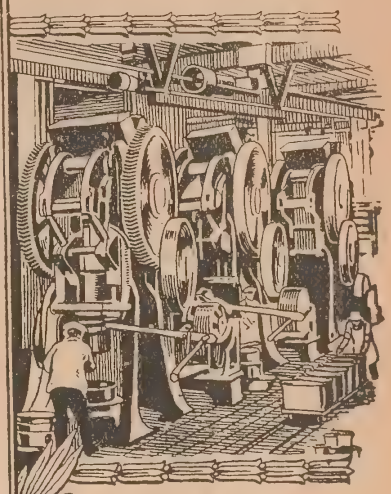
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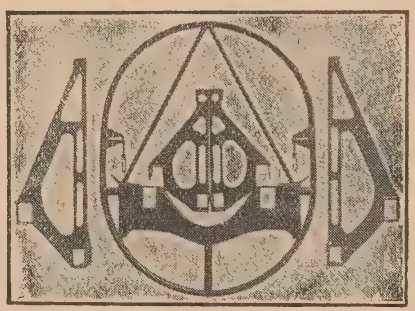


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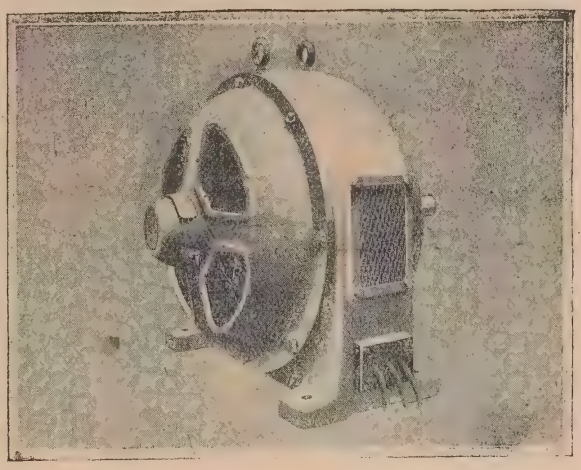
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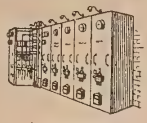
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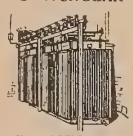
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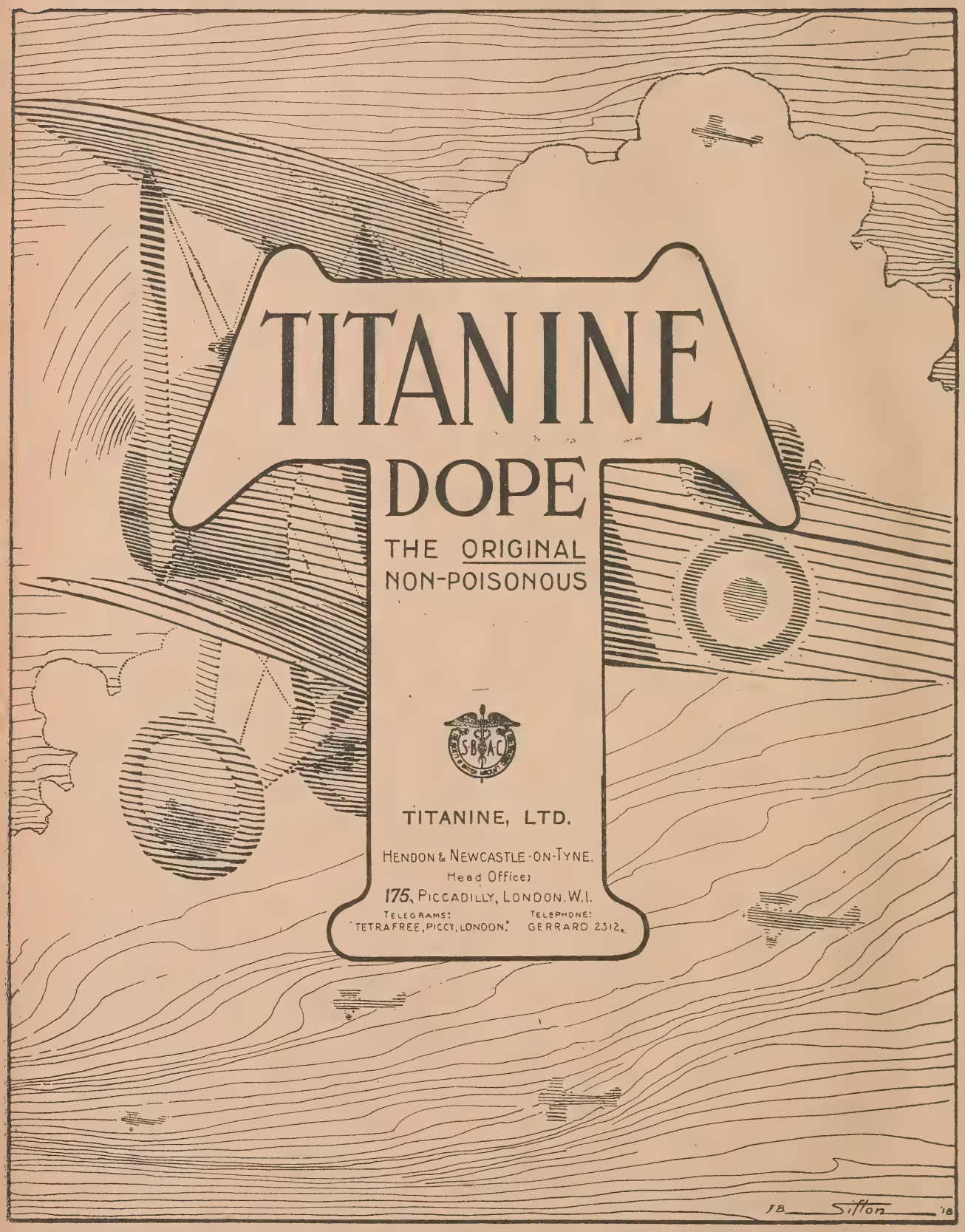
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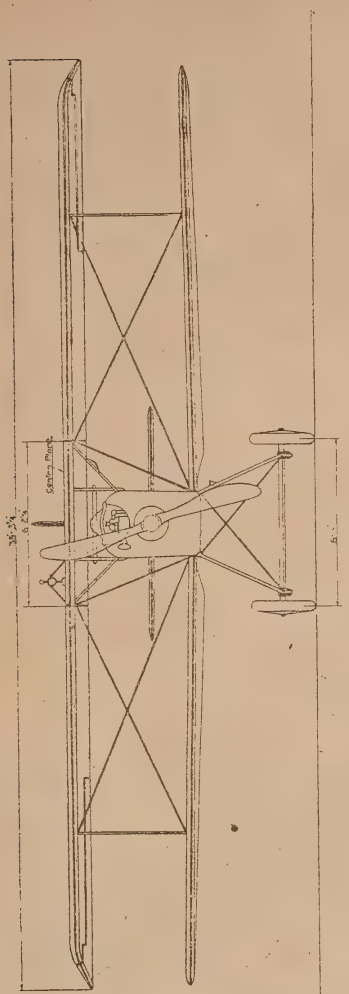
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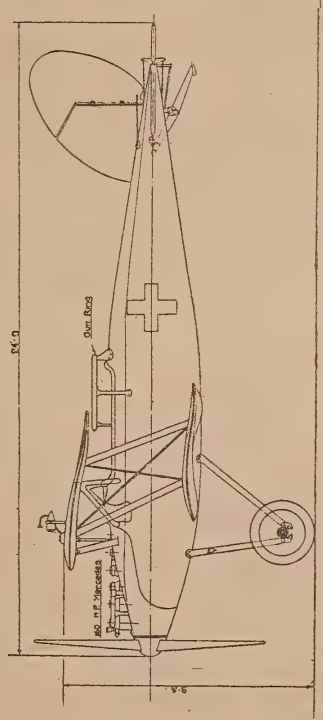

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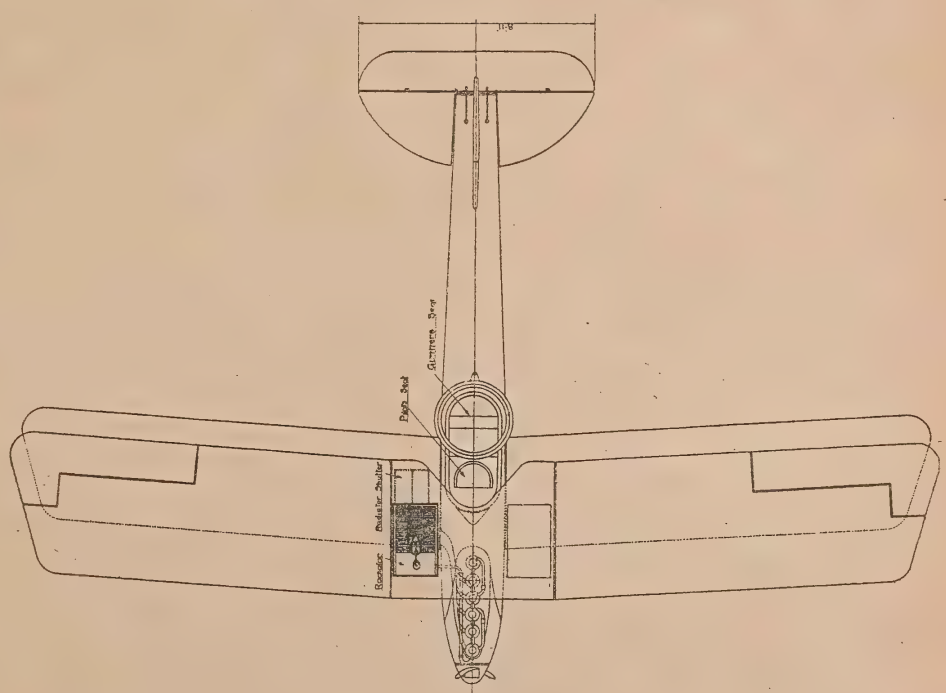


The Halberstadt Two-Seater Fighter.

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SPAN	35′ 3¼″
CHORD (Upper Plane) ...	5′ 3¼″
,, (Lower Plane) ...	4′ 3½″
GAP	4′ to 3′ 8½″
SET-BACK OF PLANE	4 degrees
STAGGER	2′ 0″
TOTAL AREA OF MAIN PLANES ... ...sq. ft.	310′ 0″
OVERALL LENGTH ...	24′ 0″
HEIGHT	9′ 6″
SPAN OF TAIL PLANE	8′ 11″
AREA ,, ,, ... sq. ft.	13′.6
TRACK	6′ 4″
AIRSCREW (Diameter)	9′ 0″
ENGINE (Mercedes) ...	180 h.p.
TOTAL WEIGHT ...	2,532 lbs.
WEIGHT PER H.P. ...	14.07 lbs.





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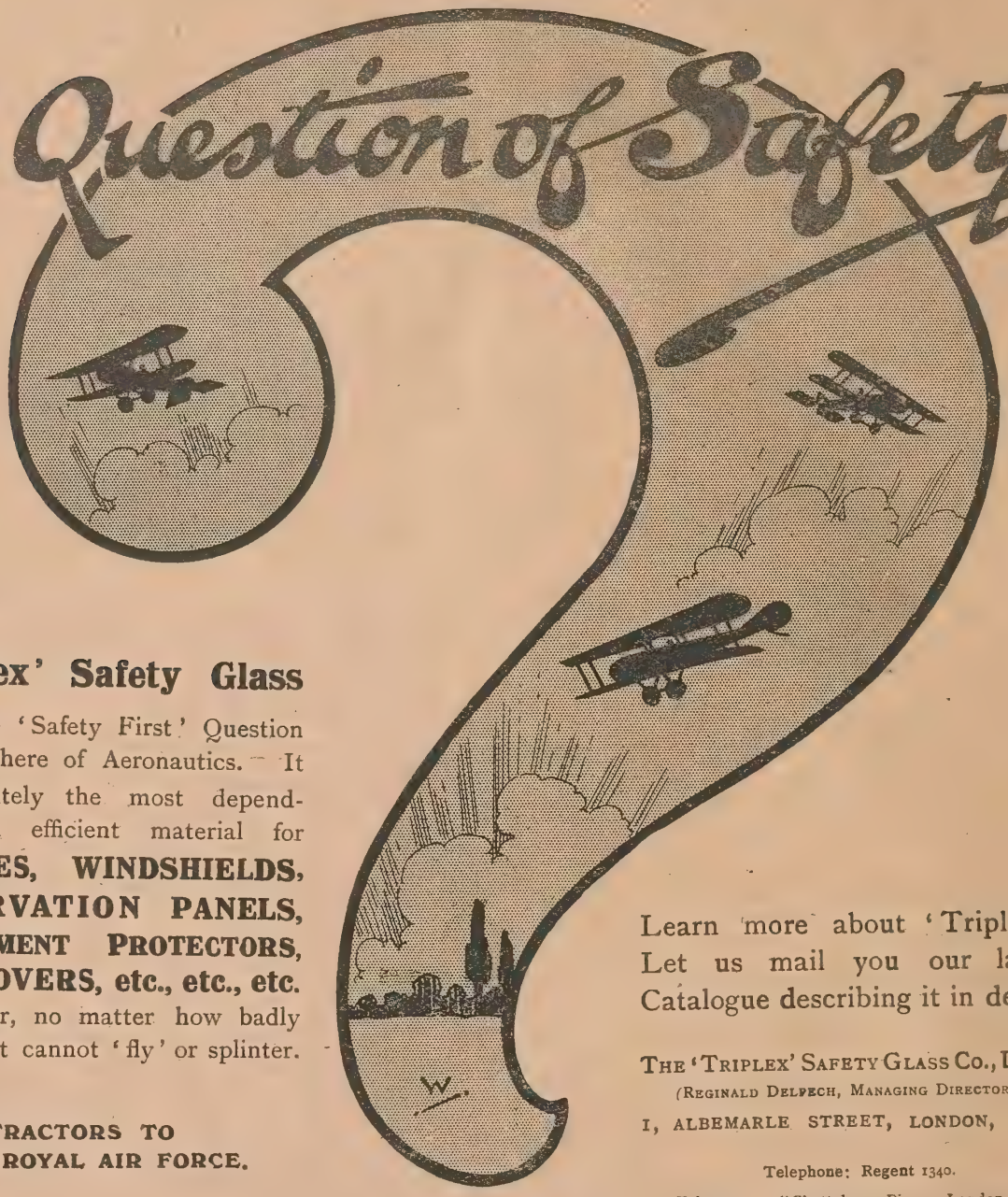
As from September 16th, 1918, all applications for permission to purchase machine tools or woodworking machinery must be made to the Machine Tool Department (T.M.7), Charing Cross Buildings, Embankment, London, W.C.2., instead of to the area Clearing House Boards, as hitherto.

Applications must be made upon Form "A," which may be obtained from the Machine Tool Department or from the various area offices of the Ministry.

D.O.R.A. (REGULATION 30A.)

Power-driven machine tools or woodworking machines and treadle lathes for woodworking or metal (3 in. centres and over) come under the above regulation. Intending purchasers must make application for permission to purchase the machines they require to the Executive Officer of the Area Clearing House Board in their district. Firms (including auctioneers) must obtain permission to sell machines from the Controller of Machine Tools, Charing Cross Buildings, Embankment, W.C.2.

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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the Current Official Patents Records :—

PATENTS APPLICATIONS.

Appleton, T. Aeroplanes. No. 16197. Oct. 5th.

Belot, A. Aircraft. No. 16060. Oct. 3rd.

Bramson, M. L. Aircraft armament. No. 15857. Sept. 30th.

Bruce, J. F. Aerial toy or amusement apparatus No. 15874. Sept. 30th.

Calthrop, E. R. Parachute-launching devices. No. 16221. Oct. 5th.

Clowes, G. Portable steps for rigging aeroplanes. No. 16109. Oct. 3rd.

Clowes, G. Incidence-indicator for aeroplanes. No. 16110. Oct. 3rd.

Gibb, G. A. Non-inflammable petrol tank for aeroplane, etc., internal combustion engines. No. 16077 Oct. 3rd

Hern, A. H. F. Jacking arrangements for automobiles, aeroplanes, airships, etc. No. 15882. Sept. 30th.

Herwin, W. R. Detonator-releasing means for fuses of aerial bombs, etc. No. 16088. Oct. 3rd.

Hubbard, J. Aircraft. No. 15891. Sept. 30th.

McConnell, R. S. Wind-speed indicators for aircraft. No. 15996. Oct. 2nd.

Maina, J. Apparatus for storing bombs in aircraft and releasing them.

Maina, J. Aeroplanes. No. 16113. Oct. 3rd.

Marshall, D. Construction of aeroplanes and airships. No. 15988. Oct. 2nd.

Nieuport and General Aircraft Co. Struts, etc. No. 16139. Oct. 4th.

Nieuport and General Aircraft Co. Struts, etc. No. 16140. Oct. 4th.

Page, F. H. Elevator, etc., control elements of aircraft. No. 16003. Oct. 2nd.

Reeve, C. R. O. Means for indicating and measuring angles of inclinations of aircraft, etc. No. 15984. Oct. 2nd.

Reeve, C. R. O. Means for determining or ascertaining speed of aircraft. No. 15842. Sept. 30th.

Shaw, W. R. D. Aircraft and airscrews. No. 15977. Oct. 2nd.

Sopwith Aviation Co. Self-gripping device or bracket for construction of aeroplanes, etc. No. 15883. Sept. 30th.

Whiteway, G. H. E. Device for landing aircraft. No. 16120. Oct. 4th.

COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER OCT. 24TH, 1918.

119,251. July 12th, 1917. Walker, C. S. Construction of framework of aeroplanes.

119,280. Sept. 27th, 1917. Cuthbertson, H. S. Cowling of engines for aircraft.

119,336. Nov. 16th, 1917. Murray, J. J. Bodies of aeroplanes.

119,337. Nov. 19th, 1917. Phillips, M., and Temple, R. Manufacture of hollow laminated articles of wood and the like.

119,364. Jan. 2nd, 1918. Taylor, W. Levels for aircraft.

119,375. Jan. 17th, 1918. Saunders, Ltd., S. E., and Thomas, H. H. Screens for regulating the admission of air to aircraft and other radiators.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

118,140. Internal-combustion engines. WARREN, W. T. SMILES, M. G., and SMILES, W. D. (trading as LONDON & PROVINCIAL AVIATION CO.), Stag Lane Aerodrome, Edgware, Hertfordshire, Aug. 10th, 1917, No. 11544. (Classes 4, 7 (iv.), and 38 (v.)).

IGNITING IN.—A dual ignition control for aviation engines comprises an instructor's three-position master switch H and pupil's two-position switch J. The latter is operative only when the master switch is in mid-position. The switch arms are heavily insulated at the outer end to form handles, and are fitted with spring-pressed ball contacts which lock into recesses in contact blocks.

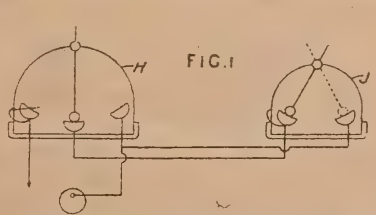


FIG.1

117,110. Rotary pumps. JONES, T. B., 2, Morley Road, Lewisham, London.

In pumps of the kind comprising a collapsible elastic tube adapted to be pressed at successive points against an abutment by a continuous series of movable external members travelling lengthwise of the tube, the pressing members consist of a series of antifriction rollers 15 carried at equal angular distances apart between a pair of rotating disks 12, the collapsible tube 21 is coupled to the delivery pipe 23 by a device which allows the end of the tube to rise and fall, and the abutment 16 consists of a plate curved about the axis of the disks and formed at its ends

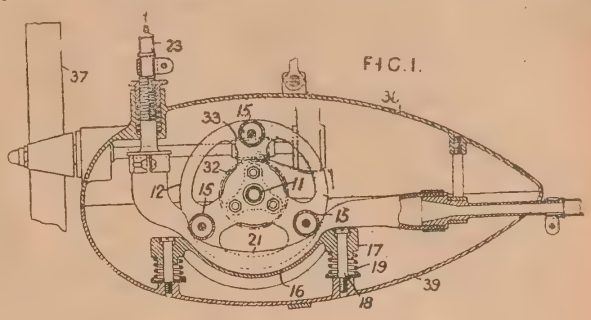


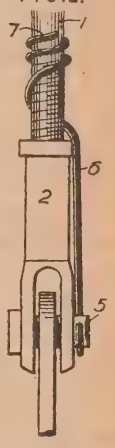
FIG.1.

with apertured bosses 17 which slide on studs 18 and are pressed towards the axis 11 by springs 19. The disks 12 may be driven by an aeromotor 37 through worm gearing 33, 32. The whole apparatus is enclosed in a two-part casing 38, 39, and may be used on aircraft for pumping petrol.

118,028. Locking tension members of aircraft, etc. BLACKBURN AEROPLANE MOTOR CO., Olympia, and COPLEY, J. W., Wynberg, Fernville Avenue, Roundhay, both in Leeds.

In means for locking tension members of aircraft and other structures, particularly where the tension members are screw-threaded into connecting-devices, a piece of wire 6 is bent round the tension member 1 and secured thereto at 7 as by soldering, and then bent round the connecting-device 2 or passed through a pin 5 or other part thereof.

FIG.2.



117,920. Anemometers, logs, etc WILLIAMS, I., Physics Department, University of Bristol, Bristol.

In order to measure the velocity of a fluid or the velocity of a body such as an airship, aeroplane, or ship through a fluid, a wire AB, Fig. 2, forming part of a Wheatstone Bridge, is exposed to the moving fluid, wires GH, HJ, KL, constituting the remaining resistance arms being disposed in a chamber communicating with the fluid through valved opening X. The wires are fused into a glass tube Z which contains and protects from corrosion all soldered or brazed joints, connecting wires, etc. In a modification, the arms HJ, KL are dispensed with, and the arrangement is as shown diagrammatically in Fig. 4. In a further form, a conductor S, Fig. 6, exposed to the fluid is connected in series with a galvanometer G, a resistance C and a battery.

FIG.4.

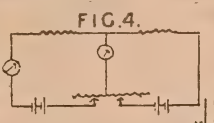


FIG.6.

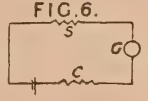


FIG.2.

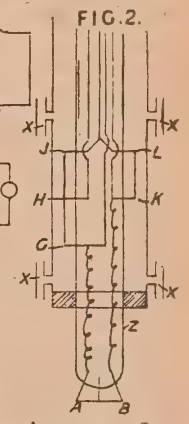
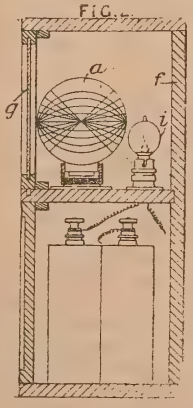


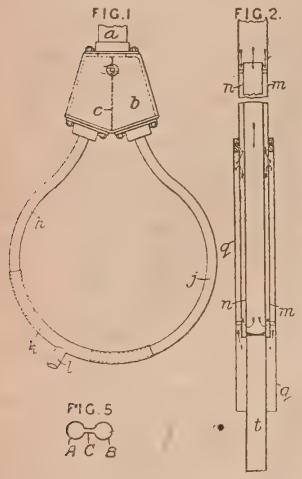
FIG.3.



117,948. Clinometers. BARRETT, A. W., St. Albans, Kingstown, Co. Dublin.

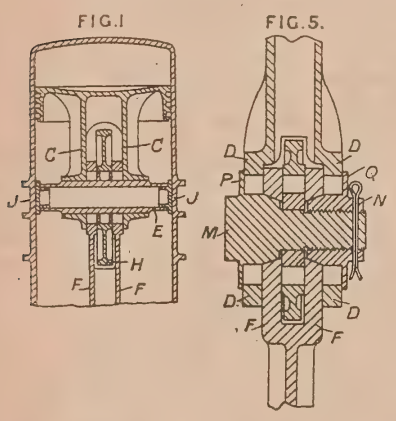
A clinometer for aircraft, etc., comprises a transparent graduated sphere *a* half filled with a non-freezing liquid, such as glycerine, and enclosed in a casing *f* furnished with a lamp *i* and a window *g*. The liquid may be coloured. To retard oscillations of the liquid, the sphere contains a number of hollow balls or floats, or fixed inwardly projecting vanes.

117,868. Exhaust-silencers. HOOTON, W., 12, Fenchurch Street, London.



The exhaust is divided into two streams of equal intensity, which are passed through pipes of different lengths or bores in order to produce interference. In one form, Fig. 1, the exhaust pipe *a* opens into a chamber *b* provided with two tubes *h*, *j*, leading to a single outlet *l*. The intensities of the two streams may be equalised by adjusting a pivoted plate *c* in the chamber *b*. In order to allow variation of the difference in length between the two tubes *h*, *j*, the outlet *l* is formed on a slidable tube *k*. In a modification, the plate *c* is fixed, and the adjustment of the intensities of the two streams is permitted by providing a slotted flange on the exhaust pipe *a* bolted to a flange on the member carrying the pipes *h*, *j*. Fig. 2 shows an arrangement in which the two streams pass through co-axial pipes of different bore, the streams re-uniting in an outlet pipe *q*. The pipe *n* has an extension *t* to facilitate its longitudinal adjustment relatively to the pipe *m*. In the case of multi-cylinder engines, two separate exhaust pipes, A, B, each connected to half the total number of cylinders, are connected near their outlets by a passage C, Fig. 5.

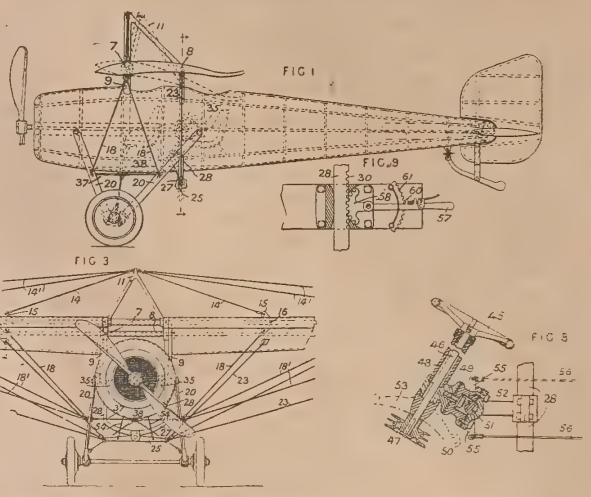
118,043 Piston-rod guides. DRAPER, J. W., 1, Appleton Gate, Newark-on-Trent.



The piston-rod of an internal-combustion or steam engine, a pump, or compressor carries a guide-roller engaging the cylinder walls. In the arrangement shown in Fig. 1, the guide-roller H is mounted in a fork F on the connecting-rod. The piston-rod in the form of webs C formed integral with the piston carries the gudgeon pin E, which may be secured by split pins and may be plugged by caps J, engaging the cylinder walls. In a modification, roller bearings are inserted between the pin E and the bearings in the webs C. In the form shown in Fig. 5, the gudgeon pin is formed with a coned head M engaging a coned hole in one of the forks F, a coned nut N engaging a hole in the other forks. Flanges P, Q retain roller bearings. In a further modification, the head M and nut N engage coned holes in the bosses D.

117,947. Aeronautics. MURRAY, J. J., 42nd Street, New York, U.S.A.

STEERING AND BALANCING; PLANES, ARRANGEMENT AND CONSTRUCTION OF.—The main planes of an aeroplane are adapted to have their angle of incidence varied without disturbing the plane bracing and are also adapted to be warped for preserving lateral balance. Figs. 1 and 3 show a monoplane in which the two wings are mounted to turn about a front spar 7 mounted at the upper ends of stanchions 9 on the body. A rear spar 8 which forms part of the frame of both wings is rotatably mounted in the upper ends of the vertical limbs 28 of a U-shaped member 27 working in guides in the body. The spar 8 is braced at its lower side by cables 23 to a lever 25 pivoted to the member 27. A mast 11 comprising downwardly divergent members is mounted on the spars 7, 8 so as to tilt with the plane. Members 16 mounted on ball bearings on the spar 7 have ears 15 braced by cables 14, 14^1, 18, 18^1 to the mast 11 and to members 20 of the chassis, stay wires 37 connected to the body at 38 preventing outward buckling of the members 20. The member 27 together with the lever 25 is raised and lowered to vary the angle of incidence of the planes by pinions or sectors 58, Fig. 9, acting on racks 30 on the vertical limbs 28, and operated by levers 57 provided with latches 60 engaging toothed quadrants 61, or by wheels 35, Figs. 1 and 3, on each side of the pilot's seat. Fig. 8 shows a control device comprising a tubular column 48 adapted to swivel about a stud 49 on a fitting 50 which is mounted on a transverse rock shaft 51 supported by brackets 52 from the vertical limbs 28 of the member



27. A wheel 45 and spindle 46 operate a drum 47 for actuating the rudder. Arms 55 on the shaft 51 are connected by cables 56 to the elevator, which is operated by longitudinal swinging movements of the column 48. Arms 53, shown in Fig. 8 at right-angles to their correct positions, are connected by cables 54, Fig. 3, to the lever 25 so that lateral movements of the column 48 about the stud 49 warp the wings in opposite directions. The invention may also be applied to biplanes and multiplanes.

117,930. Aeronautics. ABRAHAMS, E. G., and MEEK, J. W., 5, Albany Courtyard, Piccadilly, London.

AEROSTATS.—Captive and other balloons and dirigible airships are inflated with hot air or exhaust gases from a petrol motor and the temperature maintained by an electric heater. The current for the heater may be supplied through a cable from a source on the ground, or from a generator driven by the engine, or from storage batteries. The envelope may be compartmented or have more than one skin to prevent sudden deflation if ruptured by pressure, or a safety valve may be provided.

Reference has been directed by the Controller to Specification 19313/04.

SAGECRAFT ACTIVITIES.

The September edition of "Sagecraft," the house magazine of the employees of Fredk. Sage and Co., Ltd., of Peterborough and London, contains the usual assortment of articles and accounts of sports. The most interesting article is written by Mr. C. W. Tinson, being an account of the first flight of the "Flying Boudoir." This machine was an early experimental two-seater built by Sage and Co., with a 100 h.p. monosupape Gnôme engine which is said to have developed a very high speed.

Mr. Tinson claims for this machine that it would have been the fastest two-seater for its time but for the delay in delivering the engine, which enabled other firms to bring out machines which robbed Sage's of the record, and unfortunately when the machine was ready it suffered an untimely smash early in its trials.

The Sagecraft Choir held their first concert on Saturday, Oct. 5th, at the Memorial Hall, under the patronage of Mr. G. A. Coulson.

There was a long, varied programme, and all the artists contributed to making a very pleasant evening.—R.M.

THE AIRCRAFT RAG.

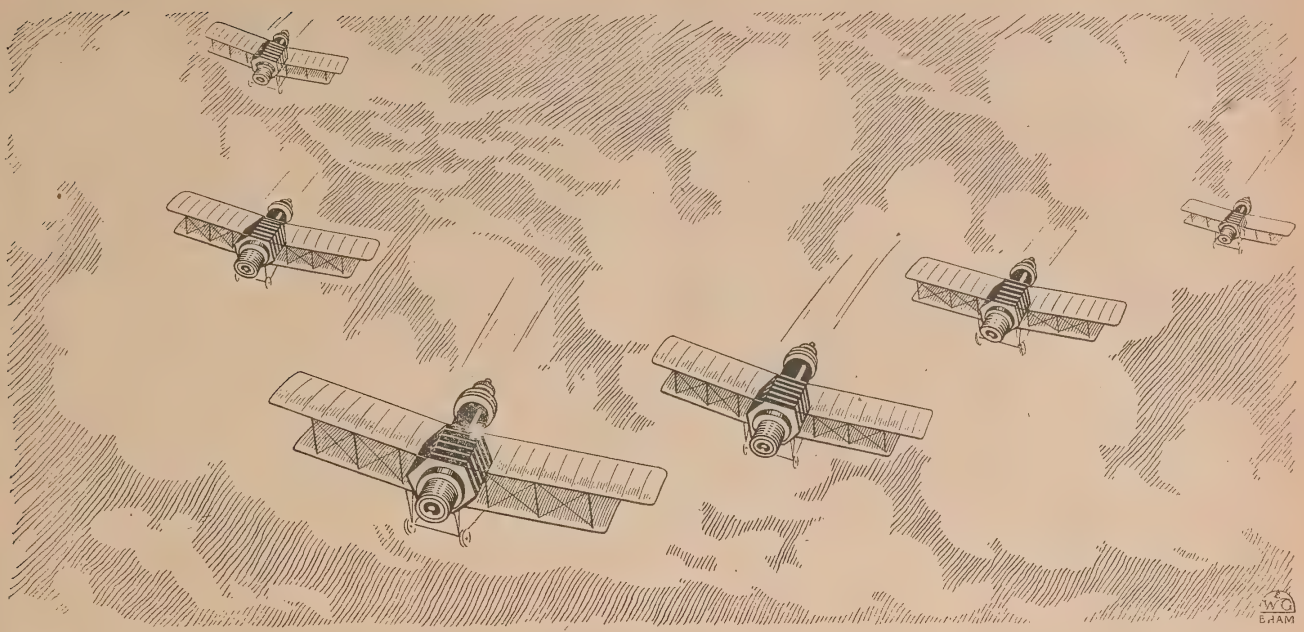
The September edition of the "Aircraft Rag," the magazine of the Aircraft Manufacturing Co., Ltd., surpasses itself in interest. There are practically thirty pages of reading matter on both humorous and technical topics, which all combine to make the book well worth 2d.

The amusing letters of Eva make pleasurable reading, as do the articles by Messrs. A. M. E. Impey and A. M. A. Coleman. Mr. G. Watts, A.C.G.I., B.Sc., has an instructional contribution on the structure of an aeroplane, which the editors of the "Aircraft Rag" are wise in publishing for the edification of the workers.

It is interesting to note that the A. M. Co., Ltd., employees have responded to the appeal for funds on behalf of the Prisoners of War Fund, R.A.F., the sum of £59 19s. 11d. having been collected to date.

The works gala and fête realised, after all expenses were paid, £96 10s., the R.A.F. Prisoners of War Fund received £46 10s., and the Hendon Cottage Hospital £50, which was a fine achievement.

Sundry other varied articles and stories, which all help in stimulating interest in the magazines, are contained in the September edition of the "Aircraft Rag."—R. M.



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"GWYNNE, LONDON."

COMMERCIAL AERONAUTICS

AIRCRAFT MANUFACTURERS AND THE MOTOR INDUSTRY.

By "MEDWAY."

There are many good arguments in support of the somewhat widespread contention that when once the war demands of the Government cease, some at least of our aircraft manufacturers will have to look round at once for some other business to keep at least part of their works employed.

It would, of course, be too late to start considering this matter only when it becomes definitely urgent, and it is beyond question that several of the firms now engaged on the construction of aircraft and aero-engines are seriously contemplating the advisability of turning their attention to some section of the motor industry. Consequently, it may be worth while to review briefly the prospects of this latter industry from the point of view of a competent firm possessing men, buildings and plant, but with no prior experience in the manufacture of motor vehicles.

Laying Plans.

Now, the first point is evidently that such a firm would need to lay its plans well in advance, to build experimental vehicles, and to test those vehicles very thoroughly before seriously entering upon quantity production. Even the old members of the motor industry find it absolutely necessary to get facilities for manufacturing and testing experimental vehicles of post-war type. Only so can they insure that the new features embodied in such vehicles will prove satisfactory in practice, and that the resulting cars will be the best that can be turned out at their price. Evidently, such preliminary work would be still more necessary to any firm not possessing experience in the production of pre-war cars.

Now, it is no easy matter to get special facilities of this kind on an adequate scale. Moreover, the arrangements in this connection are practically complete so that late comers would have to make special application and might not get the support accorded to those who have come forward in unison. However, such difficulties can generally be overcome, and the main question is whether it is worth while to go into car manufacturing at all, and, if so, upon what types to specialise.

Single Model Production.

The writer suggests that the first principle to be adopted should be a firm determination to manufacture only one model of absolutely standard type, and not to depart from this or to complicate or divide production in any way.

Probably, the idea which appeals most to everybody at first sight is that of turning out what might be called the British equivalent to the Ford. In this connection it may be remembered that even in the United States there is really only one Ford, and no direct competition has prevailed against it even to the extent of appreciably sharing the market.

Thus, the British firm which takes up the cudgels is in for a fight that the progressive American has shirked on account of its difficulties. To this we must add the grave disadvantage that the British market is only about one-tenth of the market for cheap cars in the United States.

If we are going to be pestered with luxury taxes, a high petrol tax, and all sorts of weird payments really dictated by the road surveyor, our market will be still further restricted at home. Now we cannot compete successfully unless we can look to a market which puts our car production potentially on to the level of that of our competitors.

Overseas Markets.

The question is whether our oversea markets within the Empire could be developed to fill the bill. This all depends on our Imperial policy with regard to tariffs.

The Ford business grew up under the protection of a 40 per cent. tariff wall. If our legislators propose to erect a similar safeguard, then some firm or group of firms in this country could probably get along with something parallel to the Ford proposition. Even so, a big reserve of capital would be necessary.

Our oversea markets are restricted by the poor and limited roads of the Dominions and Colonies. The man who wants to sell cars by the tens of thousands in Australia, South Africa, and so on, ought to be prepared to put a lot of money into propaganda work with a view to educating public opinion in those countries on the road question and pressing their respective Governments into a big policy of road improvement.

Moreover, the skeleton of the whole publicity, selling and service organisation would need to be erected from the very first, otherwise the cheap English car would suffer in comparison on the grounds of offering less conveniences and inferior service and being less well understood and pushed by agents A world-wide organisation of this kind would be a very expensive thing so long as the cost of it had to be paid by an output consisting of comparatively few vehicles. Presuming the vehicle to be a success, the cost chargeable upon it on these accounts would soon be reduced, but it seems evident that very strong financial backing would be necessary for the first few years.

Tariff Walls.

The worst snag of all is, however, the complete doubt as to what we are going to do about tariffs. We have a rather vague assurance that something will be done, but we have no idea whether our legislators are thinking of 5 per cent. or of 50 per cent.

The former is much the more probable and if that is all we are going to get, we shall be just about as well off without it. Altogether, the idea of cutting in on to the Ford market, while attractive, is one which upon analysis proves to be full of dangers and difficulties.

A Choice of Types.

Probably a good twelve-horse car at £250 to £300 complete with five-seated body would be a more promising proposition. There are plenty of people who would pay the extra money for something a bit better and more distinctive than the cheapest. At the same time, there are many well-established motor firms which realise this fact quite clearly, and are planning accordingly, so that there is a considerable element of speculation as to whether the newcomer, unless very heavily backed, would be able to get in on to a share of the market worth having.

There is, of course, the high-class expensive type of car which will continue to be manufactured. This business would very likely commend itself to a firm not of huge dimensions, but accustomed to doing very accurate and perfect work. The writer has always believed that there is room for a firm which produces in quite moderate quantities absolutely the most expensive thing of its kind that can be imagined.

If one were to turn out a car to sell at £300 or £400 more than a fully-equipped Rolls-Royce, there would be some people who would prefer and buy it simply on the strength of its price, because they like to be seen to be the possessors of something which proves that, whether they have sense or not, they certainly have heaps of money. I do not suggest that such a car would continue to be a commercial success unless it were a really good article, but I honestly think that if it were equal to the best and a higher price were asked for it, it would obtain a small but very loyal clientèle, and the proceeds of each sale would be enough to make up for the disadvantage of small numbers.

Commercial Vehicles.

At the moment, despite its enormous prospects, the commercial motor vehicle is a dangerous branch in which to dabble. There is a delightful uncertainty as to what the Government means to do with the swarms of lorries that are at present in its service.

Certainly tens of thousands of these will represent surplus stock when the war is over. Many will be in quite decent condition; some will be duds. If these duds are unloaded upon an unsuspecting public, the British commercial vehicle will get a beastly reputation. Even if the whole lot are thoroughly overhauled before being sold, the fact remains that their very existence will make the market extremely difficult to estimate for the next few years.

Another point about the commercial vehicle business is that manufacturers in this industry have been kept on something approaching their normal work throughout the war. Moreover, pressure has been brought to bear upon them to increase their output, which they have done to the extent of putting it up to not less than three times what it was four years ago. The result of all this is that they will be quicker off the mark than the private car people when it comes to turning back to normal work, and they will have to find very big markets to take their swollen output. I cannot imagine that there is room in this direction for any newcomers.

The Motor Cycle Market.

Perhaps a better chance exists in the direction of the motor cycle. In this industry there are only very few large firms. A

big proportion of the output comes from a large number of comparatively small concerns, not extensive enough to manufacture at the lowest possible costs and certainly much too small to cultivate the oversea markets properly at a reasonable selling and publicity cost per machine.

A Line of Action.

My own idea is that the best opening for a newcomer lies in the production of a single model of car having a five-seated body and designed specially for the oversea markets with high clearance, adequate cooling and an engine running at moderate speed and exerting decent power without necessarily being very skilfully handled.

Such a car should sell at as little above £200 as possible. It should be produced in quantity and sold through good agents who would collaborate with the manufacturers in securing publicity in their localities. They would also have to keep good stocks of spares and act as the equivalent of service depôts. The car would not be pushed for sale at home, and for this very reason the overseas buyer would have more confidence in it, because he has a prejudiced idea that the roads of Great Britain are a little smoother than billiard tables and anything that is popular upon them must be useless in other places.

Perhaps the same firm, if a large one, or possibly another firm working in liaison, would cover the motor cycle business, employing the same agents and pooling expenses in many directions. Yet a third might go in for the farm tractor business, turning out types of machines heavier and more powerful than is generally suitable at home, but so fitted as to be adapted for haulage of loads along the road as well as for work upon the land, and in this respect superior to most American products. Generally speaking, the future of the farm tractor business is very speculative. It must become a big thing, but it is early yet to say in which direction development will lead.

The Need for New Blood.

Altogether, the motor industry does not present anything very remarkable in the way of a field for the entry of newcomers, but I think a limited amount of fresh blood could be assimilated with ease, particularly because it might bring with it methods which would stir things up and earn for British motor vehicles a better reputation than they have hitherto had overseas. Their comparative failure in the past has not been due to inferior quality, but to a mixture of prejudice on the part of the potential buyers with a species of conservatism and obstinacy on the part of the manufacturer.

MR. WHITEHEAD'S DARING.

The following has been communicated for publication One feels that the only adequate reward for Mr. Whitehead's "daring" would be the O.B.E. :—

THE FUTURE OF FLIGHT.

Aero Stations on the Atlantic Ocean.

One great advantage of the War has been the forced development of aviation, and it is certain that a product of peace will, within a short period, result in the aeroplane becoming one of the most common and ever-increasing methods of long-distance locomotion for passenger, postal, private and commercial purposes. Ideas—possibly fantastic to the unimaginative and unknowing—are now being prepared in readiness for a wonderful future. The Whitecraft World's Airlines, to encircle the globe and having a vast central aerodrome already in existence at Whitehead Park, close to London, is a proposition taking concrete form. It is designed to establish associated aerodromes in various parts of the earth to assist greatly in linking together the world's commerce.

In regard to flights to and from England and America, Mr. J. A. Whitehead, of Whitehead Aircraft, Limited, takes a daring gaze into the future by hinting at the creation of flexible floating aero-stations on the Atlantic Ocean. These harbours for aircraft would be kept in position under their own power.

With the compliments of Whitehead Aircraft, Ltd., Richmond, Surrey.

[Unfortunately it is not stated whether it is Mr. Whitehead's intention to take up his residence on one of these islands.—Ed.]

AN EXHIBITION OF MODELS.

Many of the pioneers of aviation first studied aeronautics by making and watching the manners and customs of model aeroplanes. Model flying was, and is, certainly a very instructive amusement, but it must be understood that the performance of a model cannot equal the performance of a full-size aeroplane, for many reasons. One of the chief of these is the lack of a model pilot.

Where a model aeroplane is really useful is for training R.A.F. cadets to recognise enemy and friendly machines irrespective of identification marks. A scale model, which need not be able to fly, is quite useful to the instructor and to the cadet.

There are a number of various types of war models now being exhibited at the premises of Thos. Parsons & Sons, Ltd., at 315-7, Oxford Street, and readers interested in this subject would be well advised to make a point of visiting the show.

A model of the Gotha twin-engine bomber, camouflaged in the manner of a machine brought down in France, is of great interest. There is another smaller model exhibited of the same type of machine, which is painted white, except where the black crosses stand out against the light background.

The scale models of the Martinsyde two-seater and the first "Dolphin" are very good, and so is the model of a B.E.2c. There is also a large model exhibited of the monoplane in which M. Louis Bleriot first flew across the Channel.

A fantastical model of a torpedo carrying flying-boat, which one imagines would never fly for many reasons, is of interest. The fuselage is shaped like the hull of a destroyer and has biplane wings both fore and aft. Both sets of planes have side-by-side engines, each driving a four-bladed airscrew.

Many more models are exhibited, among them being several miniature marine engines, moving tanks, working model of a submarine, mine-sweepers swaying in the rise and fall of a painted canvas sea, many models of ships, both merchant and war vessels, model railway engines, machine-guns and shells.

This exhibition is well worth the 1s. that is charged for admission, and it should be understood that all proceeds are devoted to the troops.—R. M.

MR. HANDLEY PAGE'S VIEWS.

Mr. F. Handley Page, in an article contributed to "Overseas," speaks of the future in store for aerial transport.

"The great improvements recently made in the big machines," he states, "have rendered commercial transport a practical possibility. It will be possible to carry mails and passengers at a rate which compares very favourably with railway and steamship charges. As to danger, it will be infinitesimal when war conditions are removed, and certainly no greater than when travelling either by railway, motor, or steamship." Mr. Page points out that it would be possible to deliver a letter to America by aeroplane as quickly as a deferred telegram, and that documents could also be sent for signature. The aeroplane will shorten the journey to America to one day.

[One wishes that aeronautical enthusiasts would not underrate the dangers of flying. Who would hunt, if hunting were a safe amusement?—Ed.]

INDIGENOUS FUEL SUPPLIES.

It is understood that while it is true that Lord Cowdray's company (Messrs. S. Pearson and Son, Ltd.), have generously placed at the disposal of the Government, free of charge, the services of their principals and their geological staff, and also the valuable results of their geological investigations regarding the possibility of finding oil in this country, the whole cost, otherwise, of the undertaking is being borne by the Government. Lord Cowdray's company is acting in the capacity of manager for the Government, and is assisting in every way in obtaining the most suitable plant and the best expert assistance possible.

EVIDENCE.

The following story from the "Daily Express," published on Oct. 10th, is worthy of reproduction :—

An aeroplane designer was flying as observer in one of his own machines in order to have personal experience of its working. He was many thousands of feet high when he saw that a couple of wires had broken loose and were swinging in the wind. He got up, took out his camera, and photographed the flapping wires! He said afterwards: "I thought if we crashed and were killed the camera's record would tell my friends what had happened."

[Also it is probably to-day useful evidence against official tastes in wire.—Ed.]

A SUGGESTION.

Sir,—

With regard to Mr. H. E. Binstead's interesting article in last week's Aeroplane, relating to "The Comb in the Aeroplane Factories."

The suggestion Mr. Binstead sets forth, for the free edification of the Air Ministry, is certainly of interest, but I imagine that there is one point that he has overlooked.

As Mr. Binstead is probably aware, there is a large number of skilled engineers in H.M. Forces, many of whom have seen one or two, and in many cases three, years of active service. By skilled engineers I mean men who have served the recognised period for apprenticeship in engineering workshops.

Does not Mr. Binstead think that, as young dispensable men are taken from engineering works by the National Service Department, a similar number of elderly skilled men in the forces who have served for say two years on active service could be brought back to replace the unskilled men's positions. The returned men need not necessarily be discharged from the Army, but could be installed in either workshop or factory at a specified rate of pay.

In this manner the strength of the forces would not be diminished, and the output of the factories and workshops should increase, as gradually all unskilled labour would be replaced by skilled. "Triton."



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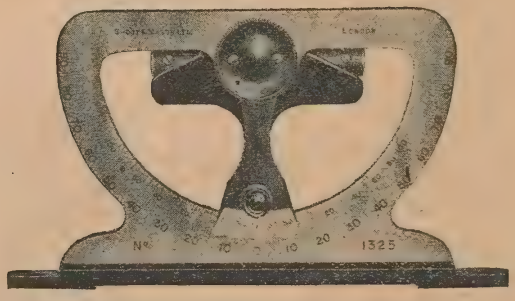
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Oct. 9th.

COPPER.—The interest shown in this market is still centred round the output question. Although in some quarters it is expected that the returns for the year will show an increase over 1917, the monthly returns continue to cause misgiving. The August report of refined Copper shows a decrease of 13,000 tons compared with July. It is also expected that the military will take more men from the refineries. In this event, the output will undoubtedly suffer.

Prices continue unchanged.

TIN.—The necessary arrangements for the control of Tin by the Inter Allied Tin Executive are proceeding, and it is expected that ultimately they will fix the price of this metal. The United States Steel Corporation has been appointed sole buyer for U.S.A. in the Straits Settlement. America has been allotted 60 per cent. of the output of Straits Tin, and the balance will be divided equally among the other Allies. The export of Straits Tin and Australian Tin from here has been prohibited.

Furthermore, no dealings whatever in Tin in foreign markets are permitted unless a written permit has been obtained from the Director of Tin Supplies. The sole buying agents for the Allies (excepting U.S.A.) are Messrs. E. Boustead & Co., and Messrs. Elder Smith & Co. have been appointed sole buying agents for Australia.

Prices do not show much fluctuation, no alteration having been recorded for over a week.

Comparative Prices.

To-day, 7th	£338	0	0 per ton.
Last month	£350	0	0 per ton.
Two months ago	£399	0	0 per ton.
Highest price, 1917	£309	0	0 per ton.

LEAD.—There is no alteration whatever in this market. Supplies for national purposes are quite satisfactory.

ALUMINIUM.—An announcement has been received from the Ministry of Munitions intimating that the price of Aluminium ingots 98/99 per cent. purity will be reduced as from Jan. 1st, 1919, by £25 per ton, making the price £200 per ton carriage paid.

The prices for remelted Aluminium scrap and swarf ingots are unaltered.

Comparative Prices.

Jan. 1st, 1919	£200	0	0
Jan. 1st, 1918	£225	0	0
1917	£225	0	0
1916	£155	0	0
1915	£81	0	0

STEEL.—The demand for Aircraft Steels continues to increase. There is, however, no fear of a shortage. The output is very satisfactory and continues to increase. It is not very difficult to obtain supplies of High Speed Steel, but Cast Steel is not quite so easy to obtain. Steel Sheet stocks should be watched very carefully, as the mills are congested with orders and supplies are not coming through very rapidly.

Prices remain unchanged.

TIMBER.—Recent arrivals of Silver Spruce have not been very large. Fair quantities of Virginia Spruce have been received and large quantities of Douglas Fir

The outlook is a little more favourable than it was three months ago. On the other hand, the Mahogany position is not so hopeful. Recent arrivals have been very small. The regulations controlling Hardwoods have not yet been issued, but it is expected that the Controller will publish them very soon, and it is also expected that some system of allocation will be introduced. As far as Plywood is concerned, the inevitable has happened, and both imported and manufactured Plywood is now under control.

FABRIC.—Supplies are fairly satisfactory, and although no alterations in prices have yet been made, it is expected that an advance will be announced in the near future.

PLYWOOD REGULATIONS.

The Air Ministry have fixed maximum prices which are applicable to all orders placed for Plywood on and after October 1st. Contractors are advised to apply to S(M)7 for a copy of a price list. All orders for Plywood must first be submitted to the Department of Aircraft Production, S(M)7, Room 124, York House, Kingsway, W.C.2., for approval. Details of the Plywood required, with particulars of contract, sizes and details of the parts of which the material is required, must be shown on such orders. One copy of the order will be retained by S(M)7 and the other two copies will be returned marked "approval" or otherwise. The following firms are authorised to supply aircraft contractors with Plywood under the new regulations:—Messrs. Borst Bros., Y. Goldberg & Co., Haggis & Co., J. Latham, Ltd., Wm. Mallinson & Sons, Ltd., Siberian & General Trading Co., Ltd., Venesta, Ltd.

THE FINISHING TOUCH.

The Davies Furnace Co.'s drying ovens are specially suitable for enamelling, lacquering, varnish drying, stoving, core-drying, and any other operations carried out at temperatures up to 500 deg. Fahr.

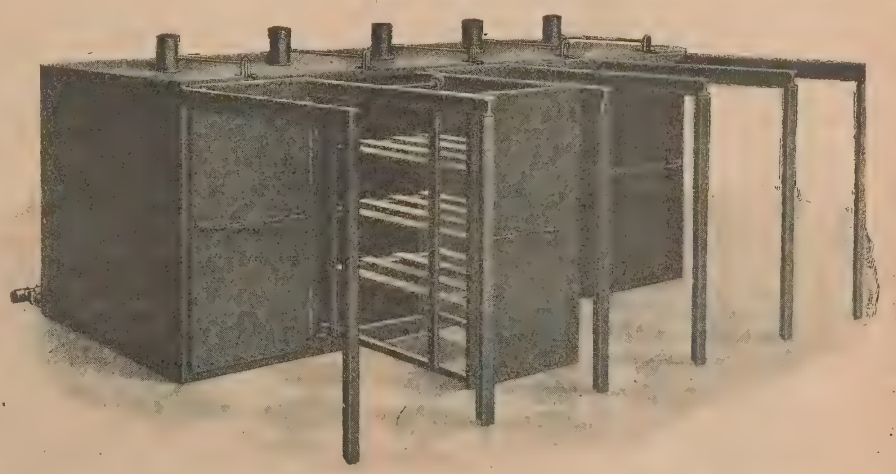
The ovens can be supplied of various types, the most usual being:—

1. The Double-cased Type, having two casings, the intervening space packed with 2 in. thickness of a special non-conducting material, and the products of combustion circulating through the heating chamber on their way to the flue outlets. Prices ranging from £7 12s. 6d. to £53 15s.

2. The Treble-cased Type (i.e., with three casings), the space between the two outer casings being packed with 2 in. thickness of non-conducting material, and the products of combustion circulating around the inner casing, so that the burnt gases do not come into contact in any way with the work to be heated. Prices ranging from £20 5s. to £76 5s.

All the stoves are strongly constructed of sheet-metal plates riveted to angle irons. Hinged doors are usually supplied, but for batteries of ovens the counter-balanced type of lifting-door can be fitted. The standard equipment includes short flue nozzles and regulaing dampers.

An illustrated list of many different types of ovens can be obtained on application to the Davis Furnace Co., Luton.—R. M.



The Davis Drying Oven.

Over 5,000,000 Parts in Stock!



On OCTOBER 1st

WE TOOK A COMPLETE INVENTORY OF OUR STOCK OF ALL ITEMS, A LIST OF WHICH WAS REPRODUCED IN LAST WEEK'S ISSUE OF "AIRCRAFT SUPPLIES"

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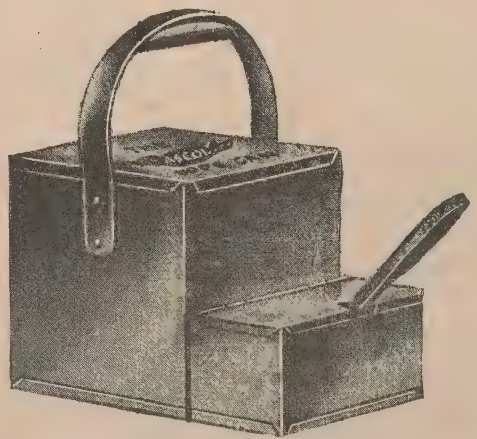
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ASCOL

AIRCRAFT FINANCE

CURRENT TOPICS.

Aircraft Manufacturing Results.

For obvious reasons the report and accounts of the Aircraft Manufacturing Co., Ltd., covering the financial year to March last demand more than the ordinary amount of consideration. Frankly, there is nothing sensational or brilliant about these results, but they are satisfactory, and perhaps the principal fault to be found is the meagreness of detail provided. Whether this is an intentional deficiency blameable to the exigencies of the moment one cannot say.

What are the Profits?

The net profits are given as £176,701. Unfortunately, it is not stated whether this sum is arrived at after providing for depreciation and the like. This is a pity. One naturally assumes that such provision has been made, but it is quite futile to hazard how much, while one is prompted to emphasise this particular point because the knowledge furnished at the time the 7 per cent. "B" preference shares were offered for public subscription that the profits of the previous year, amounting to £107,362, were arrived at after providing for all charges, including interest, depreciation, income tax, and directors' fees, as well as reserving the sum of £145,987 for the purpose of adjustment of stock-in-trade. Admittedly, the company is constantly enlarging its plant, its works, and its productive capacity, so as to keep pace with military requirements, but, nevertheless, the statement generally is very bald.

Dividend on Preference Shares.

As was hinted herein more than once within recent months, the participating rights of the "B" preference shares have proved to be of some value, for over and above the fixed 7 per cent. they are to divide £5,555, which brings the total distribution up to 11.4 per cent. Incidentally, this is not so good as had been expected in some quarters, though the price of the shares is maintained about 26s.

And the Founders' Participation.

After the "B" preference shares, the balance of profit is divisible between the preferred ordinary and the deferred ordinary shares, both of which benefit substantially from the past year's operations. First of all, the preferred ordinary are entitled to a fixed 10 per cent. This 10 per cent. calls for about £5,000, but it seems that the amount actually divided between the two classes of shares is £60,555. Deducting the £5,000 mentioned, there remains £55,555, one-half of which is divided among the holders of £50,000 preferred ordinary share capital and the other half among the holders of £2,500 of deferred ordinary capital.

Obviously the holders of both classes, more particularly the latter, have done well for themselves. It is usually the way with founders' shares—these are to be included in the category of founders' shares—but this form of capitalisation is objectionable in some respects. Indeed, the principle of the capitalisation of this particular company with two classes of participating preference shares is peculiar.

Excess Profit Tax.

An interesting point is presented by the excess profit liability. A year ago it was thought that the sum which remained to be carried forward would, after taking into account the reserve for the adjustment of stock-in-trade, be more than sufficient to meet any liability under this or the head of Munitions Levy. The reserve referred to has now been absorbed in the provision which the directors have deemed it desirable to make for the purpose of covering the estimated liability of the company for excess profits to March 31st, 1918. It is pertinent to ask: What has been actually provided? One infers that the balance of £194,282 carried forward from the year ended last March is free from any such liability. But the point is not clear: indeed, the meagreness of detail is rather striking, though it may be excused to some extent by the development programme in operation.

More Working Capital Needed.

Accompanying the report was a notice convening an extraordinary general meeting of the shareholders, with the object of enabling the directors to alter the company's borrowing powers. The borrowing powers were limited to an amount equal to the issued capital; under the new arrangement the directors obtain the power to raise or borrow such sums of money as they think fit even in excess of the issued capital. In justification of this amendment it is stated that "the business has greatly increased. The contracts in hand are of a very large amount, and necessarily involve the carrying of very large stocks of materials, and it is essential that the company should have more working capital at its disposal for carrying out these contracts.

Ministry of Munitions' Policy.

"The directors do not desire to raise the money by the issue of any further shares, which would become a permanent charge on the company, but desire to have the power to borrow from time to time such sums of money as they think necessary for the purpose of carrying on the business." This power they have now obtained. Incidentally, it is explained that the Ministry of Munitions "now regard any advance made in respect of contracts as a loan, and they have therefore required that the borrowing powers of the directors shall be increased to cover such advances." This formality insisted upon by the Ministry of Munitions is open to criticism.

Statements at the Meeting.

Presiding at the shareholders' meeting, Mr. Hugh Burroughes, in the absence of the chairman, Mr. George Holt Thomas, who was ill, had some interesting things to say. Thus, he mentioned that: "As regards profits, this company, as, indeed, any other aircraft company, notwithstanding the fact that we are pioneers, suffers by comparison with many firms who have only entered on aircraft production since the war, as we have a small pre-war standard year owing to the apathetic view taken as to the value of aircraft in pre-war days, whilst those firms who have come in since the war have a good pre-war standard on some other product, and we are, of course, all subject to 80 per cent. excess profit duty.

Providing Designs for the Allies.

"I think I may safely tell you that during the war, as in pre-war days, it has thoroughly maintained its position as one of the largest producers in this country, but we have done much more than that, inasmuch as we have provided the designs on which a large proportion of the aircraft production of this country is founded, and I think it is not going too far to say that if it had not been for our designs it would have been very difficult indeed to carry the war into the enemy's country as we are doing to-day. Also we pride ourselves on the fact that we have supplied the designs for a very large proportion indeed of aircraft production in the United States. Our latest types of machines have remarkable qualities in many ways. We can therefore claim to have done our bit in the war both as regards production of machines and also as regards production of designs.

Design Nomenclature.

"Lord Cowdray, when President of the Air Board, was good enough to describe the existence of this company at the outbreak of war as a national asset. I think you are aware that our machines are known as the D.H. machines, and are so named after Capt. Geoffrey de Havilland, who has been our chief designer since the beginning of 1914. In order that the name of our company and the name of the machines may be more closely identified, we are considering, with Capt. de Havilland's approval, a new form of nomenclature, which will be announced shortly.

Will the Government Pay?

"Now, two questions have been addressed to the board, which I may as well answer whilst I am dealing with the question of design. I am asked what royalties we are to be paid by the Government for the use of our designs in so many factories in Great Britain, and also for the use of them in large quantities in the United States. The answer is, frankly, I cannot say, but I have no reason to doubt as yet that we shall be adequately compensated, and I cannot imagine any Government would take designs, not only for this country, but for the United States—even though they may have the power under the Defence of the Realm Act—without adequate compensation.

Aircraft After the War.

"Another question, which is of even more vital interest to you, which I wish I could answer correctly is, what is likely to be the position of the Aircraft Manufacturing Company after the war? It is, of course, impossible to forecast this correctly. Naturally, aircraft will not be in the same demand as they are



Where Flying Men are fitted out.

Service Dress in Khaki

is still allowed. In matters sartorial the R.A.F. is in a transitional state, and opinions are divided on the merits of the new blue. There may be further changes before the final decision. Meantime it is well to be on the safe side by adhering to the old pattern. For one thing there need be no waiting, as supplies are ample.



Dunhill kit bears witness in fabric, fit and fastenings to the unique experience and skill of the house of its origin. Its reputation among the men who man Britain's air-fleet is established.

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We can supply the new pattern blue at special prices.

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to-day during the war, but it is a curious fact that the pioneer firms—that is, those who were in existence before the war, building aircraft whether they were wanted or not, building regardless of the fact that no recognition could be obtained for the utility of aircraft in war—have, during the war, been the designing firms—that is, the firms in a position to produce constantly improving designs to beat the German machines, and providing all the blue-prints and technical information on which the enormous production of aircraft in this country has been obtained.

Nation Should Assist.

"Now, these firms, of which perhaps the Aircraft Company is the largest, can be counted almost on the fingers of one hand, and if the Government after the war (always provided, of course, that we do our duty, as we did before and have done during the war) place their orders for the naturally diminished number of aeroplanes required with those aircraft-designing firms, as opposed to placing them with the hundreds of aircraft builders but not designers, who have only come in since 1914, then I believe that these firms would be adequately maintained. I have not yet encountered any Government official who did not think this would be the case. It is perhaps not for me to express an opinion, but at the same time I feel that it is necessary to maintain these firms in active existence, even in the interest of the nation. Our aerial fleet is as important to this country and the Empire as the Navy, to which it is now recognised as being an adjunct. It is quite certain that commercial aerial services will become an accomplished fact after the war, and these services will need machines, although it is impossible at this stage to forecast exact requirements."

Issue of a Short Loan.

It is now announced that the Aircraft Manufacturing Company is issuing £250,000 Short Term Notes, bearing 7 per cent. interest, at par. These will be in denominations of £50 each and will be redeemed at £57 10s. by five equal annual drawings commencing on Oct. 1st, 1921, or earlier if the company chooses. The premium on redemption is equal to 15 per cent. There is a class of investor partial to a security like these notes.

Vickers' Peace Programme.

Dealing with the company's peace preparations the chairman of Vickers, Ltd., remarked that it was interesting to note that the publication of his remarks on this subject in April brought a number of suggestions, including some from America, the speech having been reprinted in the United States Consular reports. On the present occasion he would only briefly recapitulate the points upon which the company hoped to work. They expected a very largely increased output in ships, railway material, motor-cars, engines, turbines, and electrical material, and among new ones of magnetos, large gas engines, land boilers, wood products, sewing machines, and repetition work generally. To carry on such a largely increased volume of trade they would, of course, require more raw material and more stocks of finished material, more particularly the latter, because of the changed nature of the trade. There were other things to be taken into account. In future they would have to go much farther afield in their search for work of the nature of electrical and railway material and many other things, and they would then be brought into conditions of payment which were different from what they had been accustomed to in this country. They would probably have to do a great deal more financing, and it was possible they might have to join with banks in financing undertakings. In respect to that, of course, they would expect returns not only from the articles supplied, but for the money advanced. The Germans in the past had made a great deal of that form of trade, and it was hoped that the field would not be left to them alone in the future.

Armaments Will Endure.

He might be expected to say something of what they expected the company to do in the future. Was it likely to remain an armament firm after the war? Personally, he had not the least hesitation in answering that question in the affirmative. Whether after the war they remained as separate States or joined a League of Nations, and possibly surrendered some of their powers of making their own arrangements to such an organisation, there would still be necessary something in the nature of a King's final argument to enforce the will of the majority. It seemed to him that, however they might be constituted after the end of the present appalling war, they would still be making arms to some extent. As to their peace programme, there would be enormous problems of reconstruction that would keep every form of engineering fully employed. There would also, he hoped, be a very large field for spreading British trade abroad, for among the things learned in the war was the value of repetition work on a scale never before attempted in this country.

Sunbeam Figures Analysed.

Interesting reading is provided by the reports of the Sunbeam Motor Company for the two years ended August 1916 and 1917; they make their appearance simultaneously. The profit disclosed for 1916 amounts to only £45,000, after providing for two years' excess profit duty and munitions levy. How much these deductions amounted to does not transpire, which is unfortunate because the shareholder is quite in the dark as to the real position. Indeed, the shareholder will probably be flabbergasted because the profit of 1917 figures at £110,000, while that of 1915, covering the first year of the war, stood out at the sensational total of £236,900 compared with £67,700 for 1914.

Striking Annual Changes.

Such fluctuations are startling and render it almost impossible to arrive at any opinion of the achievements of individual years. Thus the dividend did not suffer in 1916, being 30 per cent. as previously, yet, on the profit shown, the repetition of the payment must strike the average man as being illogical. Of course, it was repeated at the expense of the surplus carried forward.

Unsettled Stock Markets.

The peace correspondence between the Huns and President Wilson has had the effect of unsettling the Stock Exchange, which, as usual, adopted extreme views. In the case of aircraft and kindred shares, values suffered badly in some cases, only to spurt again. Armstrongs were notably weak, and not even the reference at the meeting to the after-war programme encouraged Vickers much. The "rights of subscription" to the new shares—offered, by the way, on bonus terms—have now been deducted from the price. This is now about 44s., which, all things considered, is not high. Birmingham Small Arms suffered also.

NEW COMPANIES.

Anglo-American Aerial Services, Ltd.—Private company. Registered October 10th. Capital, £100 in £1 shares. To establish, maintain and work lines of aerial conveyance between the United Kingdom and the U.S.A., Canada and Central and South America and between the continents of North and South America, and the various States and Provinces thereof and other places, and to carry on the business of manufacturers of and dealers in aircraft, hangar and aerodrome proprietors, tourist agents, contractors, etc. The subscribers (each with one share) are:—Lionel Phillips, 3, Kingscroft Road, Brondesbury, N., exporter; William H. Lewis, National Hotel, Upper Bedford Place, W.C., aircraft manufacturer. Permanent directors are:—Lionel Phillips, William H. Lewis, and Lt. A. M. Willmott, A.S.C. Registered office:—29a, Charing Cross Road, W.C.

Mayrow Industrial Systems, Ltd.—Private company. Registered Oct. 4th. Capital £10,000 in 5,000 preference shares of £1 each and £10,000 ordinary shares of 10s. each. To carry on the business of aeronautical and aircraft engineers, formerly carried on by James J. Mayrow, as "Aircraft Steel Construction Co.," and the "Rigid Airship Co.," at 39, Victoria Street, S.W.1. The subscribers (each with 25 ordinary shares) are:—J. J. Mayrow, 39, Victoria Street, S.W.1, engineer; W. T. Flegg, 39, Victoria Street, S.W.1, engineer. First directors: J. J. Mayrow and W. T. Flegg. Registered office: 39, Victoria Street, S.W.1.

Tappets, Ltd.—Private company. Registered October 2nd. Capital, £5,000 in £1 shares. To acquire the business of manufacturers of and wholesale and retail dealers in all descriptions of tappets used in connection with valves for aeroplanes, motor-cars and motor cycles carried on by Gainsford, Power and Co., at Kingsthorpe Road, Northampton. The subscribers (each with one share) are: D. H. Gainsford, 47, Collingwood Road, Northampton, engineer; J. C. Power, 3, Broadway, Northampton; J. H. Freeborough, 25, Figtree Lane, Sheffield, incorporated accountant. The first directors are:—D. H. Gainsford, J. C. Power and J. H. Freeborough. Registered office:—Advance Works, Kingsthorpe Road, Northampton.

A REVIVAL OF APPRENTICESHIP.

It is universally recognised that an improvement in former methods of juvenile employment must play an important part in any scheme of economic reconstruction after the war, and there is evidence to show that an increasing interest is being felt throughout the country in the possibility of establishing, or reviving, an apprenticeship system under conditions appropriate to modern industry. The Juvenile Advisory Committees set up by the Minister of Labour have for some time worked in this direction, and in London schemes of apprenticeship in the building trades and for the employment of learners in the dressmaking and allied trades have been adopted; while many large firms in the country have special arrangements in operation for the training of young workers.

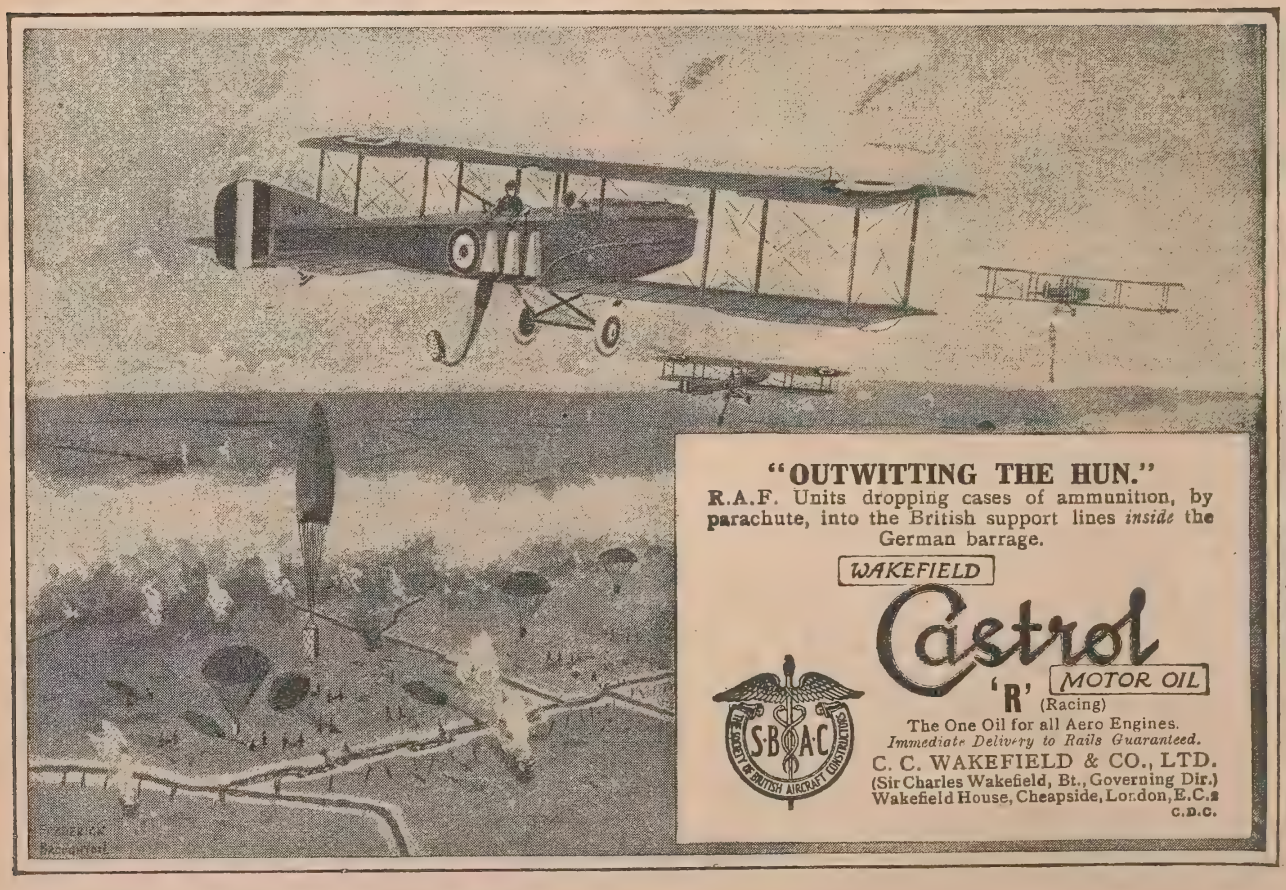
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NAVAL & MILITARY ·AERONAUTICS·



FROM THE "LONDON GAZETTE."

Admiralty, Oct. 2nd.

Vice-Adm. M. E. F. Kerr, C.B., M.V.O., is placed on the Ret. List at his own request as from Oct. 1st. Consequent thereon the following promotions are made to date Oct. 1st:—Rear-Adm. F. G. Eyre to be Vice-Adm. Capt. Keighly-Peach to be Rear-Adm.

War Office, Oct. 7th.

The name of the under-mentioned officer is to be added to those brought to notice for distinguished and gallant services and devotion to duty by Gen. Sir E. H. H. Allenby, G.C.M.G., K.C.B., Commander-in-Chief of the Egyptian Expeditionary Force, in his dispatch of April 3rd:—

Shekleton, Capt. (temp Lt.-Col.) A., R.A.F (formerly R. Mun. Fus.).

Air Ministry, Oct. 8th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Director.—Lt.-Col. (temp. Brig.-Gen.) B. C. Fellowes, and to retain his temp. rank while so empld., vice Brig.-Gen. W. W Warner, C.M.G., Oct. 1st.

Staff Officer, 1st Cl.—Maj. (temp. Lt.-Col.) S S. Keunedy, and to retain his temp. rank while so empld., Sept. 25th.

Staff Officer, 2nd Cl.—Capt. H. F. Atkinson-Clark, and to be temp. Maj. while so empld., Sept. 30th.

Staff Officers, 3rd Cl.—And to be temp. Capts. while empld., if not already holding that rank:—W. G. M. Sarel (Maj., attd. Rif. Brig.) is granted a temp. commn. as Capt. (Hon Maj.), Sept. 2nd; Lt. A. Keiller, vice Maj. E. Childers, D.S.C., Sept. 23rd; Capt. A. H. Stuart, vice Capt. E. V. King-Hall, Sept. 30th.

Staff Officer, 4th Cl.—Sec. Lt. T. Mitchell, and to be temp. Lt. while so empld., Sept. 7th.

Provost Marshal.—Graded for purposes of pay as S.O.2.—Maj. G. D. Pryor, Oct. 1st.

The following temp. appts. are made:—Group Comdr.—Lt.-Col. R. H. Mulock, D.S.O., and to be temp. Col. while so empld., Aug. 29th.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so empld. if not already holding that rank:—Lt. (temp. Capt.) T. L. F. Burnett, vice Capt. (temp. Maj.) F. J. Baker, who relinquishes the temp. rank of Maj., Sept. 18th; Capt. W. S. Evans, Sept. 19th; (Q.) Capt. H. G. Wheeler, Aug. 21st.

Staff Officers, 3rd Cl.—Capt. E. P. M Robinson, July 26th; Maj. E. Childers, D.S.C., Sept. 7th; Lt. (temp. Capt.) G. A. Williams, and to retain his temp. rank while so empld., vice Capt. W. S. Evans, Sept. 19th; Capt. S. Henderson, vice Capt. W. Benn, D.S.O., Sept. 21st; (Q.) J. Williams (Qrmr. and Capt., D. of Corn. L.I.) is granted a temp. commn. as Capt., Aug. 4th.

Flying Branch.—Capt. J. H Simpson to be temp. Maj. whilst empld. as Maj. (A.), Sept. 20th.

Lts. to be temp. Capts. whilst empld. as Capts. (A.):—T. L. Tibbs, Aug. 1st; J. A. Adam, Sept. 1st; J. M. Drysdale, Sept. 13th; J. E. Greene, D.F.C., Sept. 17th; R. I. Dines, Sept 21st; F. R. Heckney, R. C. Stokes, H. J. Welch, Sept. 25th; A. Newman, M.C., Sept. 26th; W. H. Longton, A.F.C., K. M. A. Ramsay, Sept. 27th

Capts. to be Capts. (A.):—C. E. Moore, Sept. 17th; D M. B. Galbraith, D.S.C., Sept. 25th.

Lts. to be temp. Capts. whilst empld. as Capts. (A. and S.):—A. B. Massey, Sept. 1st; F. I. Jacks, Sept. 17th; Capt. R. F. L. Dickey, D.S.C., to be Capt. (A. and S.), May 9th; Lt. J. W. Young (O.) to be temp. Capt. whilst specially empld., Sept. 5th.

Lts. (Ad.) to be Lts. (A.):—A. Glynne, Aug. 1st; F. R. Pender, Aug. 28th.

Lts. (Obsr. Officers) to be Lts. (Dir.):—A. D Light, Aug. 21st; E. W. Grant, Aug. 28th; Lt. H. A. O'Connor to be Lt. (Dir.), from (K.B.), Aug. 28th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—J. S. Hunt, June 25th; N. E. Ohman, July 9th; J. R. I. Farquharson, July 15th; N. C. McVeigh, W. M. M. McNeill-Hamilton, July 26th; F. W. Barker, Aug. 4th; J. H. Gardner, Aug. 12th; R. S. Herbert, Aug. 30th; R. Mayson, Sept. 5th; A. B. Porter, Sept. 13th.

Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts (A.):—E. H. Berry, July 3rd; J. C. Bradford, July 1st. A. C. Watkins (Sec. Lt., Linc. R., Spec. Res.) is granted a temp. commn. as Sec. Lt. (A.), July 31st.

The following Flt. Cadets are granted temp commns. as Sec. Lts. (A.):—E. J. Ashby, H. Runciman, J. R. Cox, J. C. Paler, Sept. 23rd; W. K. Salton, J. W. Paine, J. C. R. Weeks, L. R. Harvey, J. L. Rolston, Sept. 24th; R. Reynolds, Sept. 25th.

The following Cadets are granted temp commns. as Sec. Lts. (A.):—D. Agassiz, G. W. Bailey, P. H. Bernard, E. H. Biddle, W. E. Brown, W. Z. Cade, K. R. Carson, J. R. E. Coburn, F. E. Convery, E. C. Cross, L. Darche, A. B. De Wolfe, D. J. Dyer, H. B. Gilmour, M. Golt, T. C. Greeley, A. E. I. Harter, W. M. Hodgson, W. C. Henry, H. A. Hoth, L. McK. Johnston, D. C. Jones, J. Kerr, N. H Kilpatrick, G. S. C. Lang, R. J. Lester, L. W. Lloyd, J. W. MacEwen, G. E. Macklem, J. C. Mahaney, G. H. Manly, C. A. Maxwell, A. H. Maynard, W. Mein, E. E. Morrison, L. A. Myles, A. H. McDonald, C. R. McLeod, J. H. McLeod, M. C. McLeod, C. H. H. Ney, H. F. Noel, C. G. Nuttall, A. A. Oldham, F. T. Pearce, S C. Ridges, W. Saunders, V. R. Schieck, E. M. Sheppard, J. H. Shields, W. J. Spicer, G. F. Sponenburg, C. H. Stockwell, A. B. Taylor, G. W. Taylor, J. B. Tiffin, J. Tough, A. F. Waltzinger, J. T. Whitney, J. S. Williamson, L. A. Wilson, S. K. Young, E. S. Pollock, J. H Hartle, T. Lund, Aug. 22nd; W. T. Allen, I. R. Bailey, W. K. Badenach, E. Balestier, C. G. Beatty, C. H. Booth, E. G. Breen, J. W. Caines, S. A. Corley, J. Clayton, K. F. Cleall, R. Davison, M. R. Dynes, A. G. Everett, P. J Gernsbacher, P. D. B. Gillespie, V. Graham, W. J. H. Hawkins, C. Hess, A. S. Hunt, J. B. Jackson, H. J. V. Jacobs, O. A. Johnson, R. C. Love, R. M. Macdonald, D. H. Mackay, A. L. Maclean, E. McGeer, A. E. Naylor, L. J. Oldfin, D. L. Plumton, W. A. Prendergast, W. Roberts, G. N. Russell, M. G. Sample, C. A. Smith, W. F. Spencer, W. P. O'B. Sweeney, M. J. H. Weir, W. J. Wigmore, Aug. 29th.

The following Flt. Cadets are granted temp commns. as Sec. Lts. (A.and S.):—F. W. de Beer, P. Davis, Aug 10th; R. H. Trollip, Aug. 17th; H. R. Humphreys, Aug. 24th; A. S. Cameron, E. G. Hill, Aug. 31st; J. R. Kellett, N. M. Corcos, Sept. 24th; T. Swinburne, Sept. 25th.

The appts. of the following as Sec. Lts. (A. and S.) are ante-dated as stated against their names:—R. C. Davies, April 1st; S. A. Forberger, April 2nd; H. R. Abey, April 4th; J. A. Mitchell, April 6th; A. S. Maltby, April 9th; C. E. Thomas, April 11th; F. C. Pacey, April 12th; F. M. Clark, April 28th; G. A. A. LeMoine, May 1st; C. A. Koch, May 10th; E. A. Spence, May 12th; J. E Jennings, May 21st; J. B. O'Neil, May 24th; R. W. Murray, May 30th; J. M. MacDonald, June 2nd; R. C. Pattullo, June 8th; W. R. Penny, June 12th; W. Gilbert, June 13th; H. F. Dobson, June 15th; W. G. Pearce, June 16th; H. G. Fraser, B. S. Philp, June 17th; M. Marks, June 19th; L. H. McHarg, C. McLean, June 23rd; C W. Duncan, O. S. Clefstad, June 26th; A. W. Johnston, June 30th; H. J. Philp, July 12th; N. C. McVeigh, J. W. Wilson, E. S. W. Smith, P. R. Davis, M. J. Moffatt, July 13th; L. A. Brais, July 14th; R. J. Clench, July 16th; J. C. Malcolmson, July 17th; R. W. Kerr, July 18th.

The following are granted temp. commns as Sec. Lts. (Dir.):—G. Kaines-Thomas (Sec. Lt., R.G.A., Spec. Res.); F. L. Trower (temp. Lt., R.E.), and to be Hon. Lt.; J. Hutton (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Aug. 21st.

Sec. Lt. T. B. Howard (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (Obsr. Officer), Oct. 5th.

Cadets granted temp. commns. as Sec. Lts (Obsr. Officers):—R. S. Asher, A. G. Bailey, C. Bartow, L. C. Battle, J. W Clarke, M. J. Clement, A. W. Crozier, W. A. Dickson, I. E. Erb, N Ferrell, G MacK. Finlayson, D. A. Fraser, E. J. Hardy, E. F. Harrington, S. E. Minrath, J. Morren, R. W. Moss, M. P. McCaffrey, E. P. McCarville, P. B. McCowan, C. S. D. McLeod, D. F. McTavish, W. T. Smith, N. G Strong, R. O. Trentowsky, E. D. Valiant, C. F. Wadsworth, G. Williams, J. H. A. Wilmot, Aug. 29th.

The following are granted temp. commns as Sec. Lts. (Obsr. Officers):—C. L. Douthwaite (Sec. Lt., E. York. R., T.F.); A. L. Willcox (Lt., Dorset R.), and to be Hon. Lt.; R. H. Milner (Sec. Lt., E. York R., Spec. Res.); R. A. S. Howes (Lt., S. Lan. R.), and to be Hon. Lt.; J. V. McKenzie (Lt., W. Ontario R., C.E.F.), and to be Hon. Lt.; M B. C Lake (temp. Sec. Lt., R. W. Surr. R.), Oct. 5th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—L. Wadsworth, May 25th (since deceased); C. W. Newstead, F. H. V. Coomer, G. H. Dixon, N. Fielden, W. Rushton, G. B. Allen, F. W. Brown, W. M. Newton, Sept. 30th; J. M. Caldwell, D. Manners, R. D. W. Nicholls, P. E. Sawle, R. Mugford, C. B. Parker, F. Priestman, G. R. Hodson, Oct. 4th.

The following relinquish their commns. on ceasing to be empld.:—Lt. C. N. Milligan (Lt., Brit. Col. R.), Sept. 12th, Lt. R. Gore (Lt., Hussars), Sept. 22nd. Capt. M. McN. McBride (High. L.I.) relinquishes his commn. on account of ill-health contracted on active service, Oct. 9th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—A. Edwards, W. R. F. Gillham, Oct. 9th. Lt. W. Harle (Lt., Northd. Fus., T.F.) resigns his commn., Oct. 9th; Lt. G. Hook relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 9th; Lt. W. L. P. Gould relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Sept. 28th (substituted for notification in the "Gazette," Sept. 27th.

Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs. (substituted for notification in the "Gazette," Sep. 27th:—J. G. Anderson, A. H. Bristow, J. R. S. Cox, J. L. Eastwood, A. L. E. Edwards, J. Gannon, W. B. Jones, L. Marriott, S. H. Roberson, J. J. Ward, Sept 28th.

Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—H. J. FitzGibbon, E. A. Humphries, Oct. 9th.

Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs.:—L. C. G. M. le Champion, E. G. Fry, J. A. Gibson, G. H. Haslam, A. J. B. Thompson.

The date of appt. of Lt. J. W. Schofield as temp. Capt. (A.) is Oct. 1st, and not as stated in the "Gazette" of Sept. 24th. Surname of Lt. (temp. Capt.) C. M. Brisco-Owen, M.C., is as now described, and not as stated in the "Gazette" of Aug. 27th; surname of T. F. Macguire is as now described, and not as in "Gazette" of Sept. 24th, page 11,348; name of Flt. Cadet Charles Henry Alcroft Farnan is as now described not Charles Farnon as in the "Gazette" of Sept. 17th; initials and surname of Lt. (temp. Capt.) P. B. O. L. B dit Morency are as now described, and not P. Movency, as stated on page 10,007 of the "Gazette," Aug. 27th; notification in the "Gazette" of Aug. 20th concerning Flt. Cadet O. W. Clarke is cancelled; notification in the "Gazette" of Sept. 3rd concerning Flt. Cadet T. G. Brooke is cancelled.

Administrative Branch.—Capt. C. J. Orde to be temp. Maj. whilst empld. as Maj. from (A.), Aug. 16th.

Capt. (temp. Maj.) E. H. Cockburn retains his temp. rank whilst empld. as Maj., from (S.O.), Sept. 9th

Lts. to be temp. Capts. whilst empld as Capts.:—J. H. Catleugh, April 1st; H. A. T. Trier, Sept. 23rd; Sec. Lt. (Hon. Capt.) E. Codyre to be temp. Capt. whilst empld. as Capt., Aug. 13th. Capt. E. O'D.

Crean retains his rank (without the pay and allces.) on reclassification from (Dir.), Aug. 9th; A. S. Weeding (temp. Capt., Spec. List) is granted a temp. commn. as Capt., July 1st.

Lts. (A.) to be Lts.:—R. G. Taylor, Aug 9th; G. E. F. Elliott, Aug. 24th; A. Ashurst, Sept. 2nd; C. C. Statt, Sept. 28th.

Lts. (O.) to be Lts.:—F. W. A. Vickery, Aug. 24th; C. E. Prescott, Sept. 23rd; B. Farmer, N. H. de V. Heathcote, Sept. 28th.

The following are granted temp. commns. as Lts.:—H. G. Jones (temp. Lt., A.P.D.), J. G. Lumsden (Lt., Scots Gds.), April 1st; J. P. P. L. Biggs (temp. Lt., A.P.D.), July 1st; F. Whittaker (Qrmr. and Hon. Lt., Spec. List), Sept. 21st; C. H. Bidmead (Lt., Lab. Corps), Sept. 23rd; T. C. Cook (temp. Lt., Lan. Fus.), Sept 24th; J. L. Stewart-Moore (Lt., New Armies), Sept. 25th; F. R. Haggie (temp. Lt., Life Gds.), Sept. 27th.

Sec. Lts. (Hon. Lts.) to be temp. Lts. while empld. as Lts.:—S. H. Alston, Sept. 7th; F. Bagot, from (T.), Sept 27th; Sec. Lt. A. Snell to be Lt., Oct. 9th.

The following are granted temp. commns. as Sec. Lts.:—R. F. Hamlyn (Lt., Lond. R., T.F.), and to be Hon. Lt., July 27th; F. A. Mansfield (temp. Sec. Lt., R. W. Kent R.), Sept. 8th; J. P. Nolan, Sept. 14th; A. S. Mansfield, Oct. 5th. J. H. Fraser, Oct 7th. Sec. Lt. E. Edwards to be Sec. Lt., from (T.), Aug. 22nd

The following relinquish their commns. on ceasing to be empld.:—Lt. L. J. Dennis (Lt., K. Lpool. R.), Aug. 17th, Maj. C. W. Price, (Maj., Lond. Yeo.), Sept. 17th. Sec. Lt. J. B. Waddington relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct 9th: Sec. Lt. W. H. C. Burton resigns his commn., Oct. 9th. The notification in the "Gazette" of July 23rd concerning Lt. W. A. Watson is cancelled

Technical Branch.—Maj. (temp. Lt. Col.) E. G. O. Beuttler to be Maj (temp. Lt.-Col.), from (Ad.), May 23rd.

Lts. to be temp. Capts while empld. as Capts.:—E. J. Edwards, Sept. 21st; H. S. Elliott, Sept. 23rd.

Capt. (temp. Maj.) J. H. Dunn relinquishes his temp. rank at his own request, Sept. 23rd.

Lts. (A.) to be Lts.:—W. F. Mytton, Aug. 31st; J. M. R. E. St. Amory, Sept. 7th; J. Ditchfield, Sept. 18th. Lt. L. Southall to be Lt., from (A. and S.), Aug. 23rd.

Lts. (Obsr. Officers) to be Lts.:—T. H. D Silvers, Aug. 24th; J. W. Pearson, Aug. 28th; J. Fleming, Aug. 29th; H. E. Hall, Sept. 7th; L. Marsh, Sept. 13th. C. Hole (Lt., R.N.V.R.) is granted a temp. commn. as Lt., and to be Hon. Capt., June 17th.

Sec. Lts. (Ad.) to be Sec. Lts.:—E. S. Osborn, April 15th; S. Aspinall, Aug. 5th; A. B. Evans, Sept. 10th; F. C. Starkey, W. Haddon, A. J. Christie, S. C. Bicknell, Sept. 14th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) confirmed in their rank as Sec. Lts.:—G. E. H. Smith, April 15th; V. H. C. Gayford, Aug. 12th.

The following are granted temp. commns. as Sec. Lts.:—C. W. Habrow (temp. Lt., attd. R. W. Kent R.), and to be Hon. Lt., June 17th; R. Nicolle (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Sept. 21st.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. (Hon. Capt.) T. H. McClelland (Capt., S.A. Native Labour Troops), Sept. 9th; Sec. Lt. (temp. Lt.) J. Millar-Whitfield (Lt., R.E.), Sept. 24th. Sec. Lt. W. R. Gemmill relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 9th. Sec. Lt. (Hon Lt.) C. Russell (Lt., R.E., T.F.) relinquishes his commn. on account of ill-health, Oct. 9th.

Medical Branch.—The following Lt.-Cols. to take seny. from April 1st:—R. H. Mornement, prec. next below H. H. Southey, W. H. Pope, prec. next below R. H. Mornement; N. J. Roche, prec. next below F. L. M. Boothby; J. St. J. Murphy, prec. next below C. A. Ward; H. Cooper, D.S.O., prec. next below C. F. Pollock.

The following Majs. (temp. Lt.-Cols.) to take seny. from April 1st:—H. F. Horne, prec. next below G. H. Padley; H. C. T. Langdon, prec. next below C. S. McNab. Capt. (temp. Lt.-Col.) R. P. Williams to take seny. from April 1st, with prec. next below E. P. Plenty.

The following Capts. (temp. Majs.) to take seny. from April 1st:—C. H. S. Taylor, prec. next below F. C. Jenkins; J. McIntyre, prec. next below P. E. L. Gethin. The following Capts to take seny. from April 1st:—A. L. George, prec. next below R. H. Woods; A. P. Woolright, prec. next below D. Thomson; A. P. Bowdler, prec. next below E. W. Leggatt; A. G. Graham, prec. next below W. B. Stuart; H. L. H. Greer, prec. next below A. H. O'H. Wood; C. S. Glegg, prec. next below W. A. McClatchie; A. T. Williamson, prec. next below T. G. Baxenden.

The following are granted temp. commns. as Lts.:—A. Parker, Oct 5th; G. M. Wishart, Oct. 7th.

Dental Branch.—L. Wigoder is granted a temp. commn. as Lt., Oct. 7th.

Memoranda.—Lt. E. N. L. White is granted the hon. rank of Maj., Oct. 8th; H. G. Wheeler (temp. Capt., A.O.D.) is granted a temp. commn. as Capt., May 15th.

The following relinquish their commns. on ceasing to be empld.:—Lt.-Col. (temp. Brig.-Gen.) W. W. Warner, C.M.G., and is granted the hon. rank of Brig.-Gen., Oct. 1st; Capt. F. A. Barton, Aug. 31st; Sec. Lt. (on prob.) V. A. Powell, Sept. 20th.

Maj. W. H. Ewen relinquishes his comma. on account of ill-health, and is granted the hon. rank of Maj., Oct. 9th.

Capt. H. J. de C. Moore relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt, Oct. 9th.

Lt. (temp. Capt.) J. P. Flynn resigns his commn. to resume his medical studies, and is granted the hon. rank of Lt., Oct. 9th.

* * *

The King has given directions for the appt of Lt.-Col. Robert Stewart Roy, R.A.F., to be an additional member of the third class or companions of the Order of St. Michael and St. George, in recognition of distinguished services during the war.

War Office, Oct. 9th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Schools of Instn.—School of Technical Training.—Park Comdr.—The appt. of temp. Maj. G. K. Field, Gen. List, is antedated to Dec. 3rd, 1917.

Overseas Forces.—Canada.—Central Ontario Regt.—Temp. Capt. M. L. Fitzgerald relinquishes his commn. on appt. to R.A.F., Aug. 4th, 1918.

War Office, Oct. 10th.

The following are among the decorations and medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign:—

His Majesty the King has given unrestricted permission in all cases to wear the Decorations and Medals in question.

Decorations Conferred by the President of the French Republic.

Légion d'Honneur

Croix d'Officier.

Bt. Col. (temp. Maj.-Gen.) John Maitland Salmond, C.M.G., D.S.O.

Croix de Chevalier.

Capt. (temp. Maj.) the Hon. Edward Alexander Stonor, R.F.C., Spec. Res.

Croix d'Officier.

Capt. (temp. Lt.-Col.) John Dolben Mackworth, C.B.E., R. W. Surrey R. and R.F.C.

Croix de Chevalier.

Lt. Henry James Finer, R.E. and R.F.C.

Qrmr. and Hon. Capt. Thomas Lyons, R.F.C.

Croix de Guerre.

Temp. Lt. William Arthur Barnes, R.F.C.

Flt. Comdr. Frank Thomas Digby, D.S.C., R.N.A.S.

Lt. (temp. Capt.) Whyndham Brookes Farrington, D.S.O., Notts and Derby R., Spec. Res., and R.F.C.

Lt. (temp. Capt.) Cecil Charles Morley, R.F.C., Spec. Res.

Maj. Herbert Victor Stammers, R.F.C.

Temp. Capt. Tilden Chrismas Thomson, Gen. List and R.F.C.

Temp. Lt. William Arthur Winter, Gen. List and R.F.C.

18053 Flt. Serjt. Henry Edwin Beauchamp, R.F.C. (Knightsbridge, W.).

10267 1st Cl. Air Mech. Clive Stuart Furrell, R.F.C. (Kennington, S.E.).

4946 Qrmr.-Serjt. Joseph James Gadd, R.F.C. (St. Leonards).

2553 Serjt. Cecil Wheadon Noel, R.F.C. (L'Ancresse Vale, Guernsey).

7679 1st Cl. Air Mech. (actg. Cpl.) Cecil Perry, late R.F.C. (Gray's Inn Road, W.C.).

Medaille Militaire.

115569 Serjt. (Aerial Gnr.) Fred Hopper, M.M., R.F.C. (Ushaw Moor Colliery, Durham).

Air Ministry, Oct. 11th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Director.—Lt.-Col. K. G. Brooke, and to be temp. Col. while so empld., Oct. 1st.

Staff Officer, 2nd Cl.—Capt. L. M. Wells-Bladen, and to be temp. Maj while so empld., Aug. 5th.

Staff Officers, 3rd Cl.—Sec. Lt. (temp. Capt.) F. Waldron, and to retain his temp. rank while so empld., July 16th to Oct. 2nd); Lt. (temp. Capt.) H. C. G. Allen, and to retain his temp. rank while so empld., Sept. 30th; Lt. J. E. Pike, and to be temp. Capt. while so empld., Oct. 2nd.

Staff Officer, 4th Cl.—Sec. Lt. O. H. C. Webb, and to be temp. Lt. while so empld., vice Lt. (temp. Capt.) J. E. Pike, Oct. 2nd.

The following temp. appts. are made:—

Col. (Eqtipt.).—Lt.-Col. A. Christie, D.S.O., and to be temp. Col. while empld., Sept. 23rd.

Staff Officer, 3rd Cl.—Lt. (temp. Capt.) W. W. Moser, and to retain his temp. rank while so empld., Aug. 5th; Capt. F. T. Williams, July 17th; Capt. H. A. Fordham, Sept. 16th; Capt. E. B. A. Rayner, Sept. 22nd; Capt. S. M. Wood, Sept. 25th.

Staff Officer, 4th Cl. (1st Gr.).—Capt. C. J. Temperley, Aug. 21st.

Staff Officer, 4th Cl. (2nd Gr.).—A. R. Ovens (Lt., R.A.), and is granted a temp. commn. as Lt., Aug. 21st; Sec. Lt. (Hon. Capt.) A. H. Fynn, and to be temp. Lt. while so empld., Aug 21st.

Flying Branch.—Capt. H. F. Delarue to be temp. Capt. (A. and S.) while empld. as Capt., Oct. 1st.

Lt. (temp. Capt.) H. J. Brewster to retain his temp. rank while empld. as Capt. (A. and S.), July 30th.

Lt. (temp. Capt.) J. A. Middleton, M.C., to retain his temp. rank while empld. as Capt. (A.), from (S.O.), Sept. 18th.

Lts. to be temp. Capts. while empld. as Capts. (A.):—G. H. Russell, July 6th; G. M. Duncan, Sept. 16th; S. H. Wallage, Sept. 28th; C. G. Ross, Sept. 29th; M. M. Freehill, Sept. 30th; W. H. Buckeridge, Oct. 6th; G. W. Waring, Oct. 7th.

Sec. Lt. H. D. McLaren to be temp. Capt while empld as Capt. (A.), Sept. 26th

Lt. D'A. J. Prendergast to be temp. Capt. while empld. as Capt. (K.B.), June 10th.

Lt. D. S. Allen to be Lt. (A.), from (T.), Sept. 5th.

Lt. W. R. Hibbins to be Lt. (A.), from Obsr. Officer, Sept. 22nd.

The notification in "Gazette" Sept. 27th concerning Lt. G. M. Duncan is cancelled.

The notification in "Gazette" Aug. 13th concerning Lt. (temp. Capt.) C. H. Russell is cancelled.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—C. A. V. Weise, H. E. G. Phillips, Aug. 13th; H. C. Durant, R. J. Eve, G. Brownrigg, Aug. 31st; T. B. Davie, R. G. Davie, G. D. Ilsley, C. C. Kruger, F. Laughton, A. Mulroy, F. Marnie, G. Paton, J. H. Reed, R. L. Richards, H. Simon, E. H. C. Steeds, N. C. Tanner, G. M. Van Der Merwe, I. Kleinot, L. Marquard, R. R. Laver, D. N. Taylor, C. Vigne, J. G. Page, Sept. 21st; W. H. Bruce, K. J. S. Boardman, C. B. De Villiers, A. W. Du Bourg, C. G. Goldsbury, J. W. Gravell, H. L. Knight, G. T. Miles, F. R. Schmidt, T. R. Sharpe, B. Smulian, P. C. Thurnau, E. H. Van der Riet, J. G. F. Van Rooyen, J. O. Waddington, D. C. H. Wayland, A. Wright, J. M. Frazer, Sept. 28th; G. R. Newton-Bridle, W. T. Brownlee, Sept. 29th.

The following are granted temp. commns as Sec. Lts (A. and S.):—N. Q. Harvey, Aug. 10th; D. G. Malherbe, Sept. 7th; J. H. Matthews Sept. 18th; E. E. Jones, Sept. 23rd.

The following officers are antedated in their appointments as Sec. Lts. (A. and S.), with effect from the dates stated:—G. M. P. O'Keefe, May 1st; S. D. Connolly, May 18th; G. K. Mills, May 24th; W. St. C. Slater, June 4th; H. C. Dean, July 16th; J. M. Porteous, July 24th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—V. M. V. Field, S. I. Foster, April 27th; J. Hart, Aug. 29th; H. E. Froy, Sept. 19th; E. Pidgeon, I. G. C. Edgar, E. D. Davidson, W. M. Munshaw, H. C. Grout, C. Wilkie, F. H. Turner, Sept. 22nd; A. Whiteley, W. C. Woods, F. B. Booth, E. A. Powrie, Sept. 25th; H. L. Christie, H. H. R. Hanford, W. W. Coates, S. L. F. St. Barbe, J. D. Brine, W. R. Kelley, R. T. E. Wood, C. C. Worboys, C. A. Stuart, F. K. Damant, R. K. Duchesne, R. J. Ottaway-Wilson, Sept. 26th; S. N. Webster, A. G. Wilson, A. E. Hitchcock, A. A. Pearce, M. Hinshelwood, T. D. Ross, E. A. Roberts, J. H. Chambers, J. G. Caygill, E. W. Steele, C. W. Smith, G. F. Taylor, A. Watson, Sept. 27th; D. Keiller, E. J. McGee, Sept. 28th; F. W. Perrin, A. C. Evans, J. Grisdale, Sept. 29th; L. S. Gillett, F. Cox, B. Spaven, H. C. T. Browne, F. J. Reynolds, J. I. Morgan, Sept. 30th.

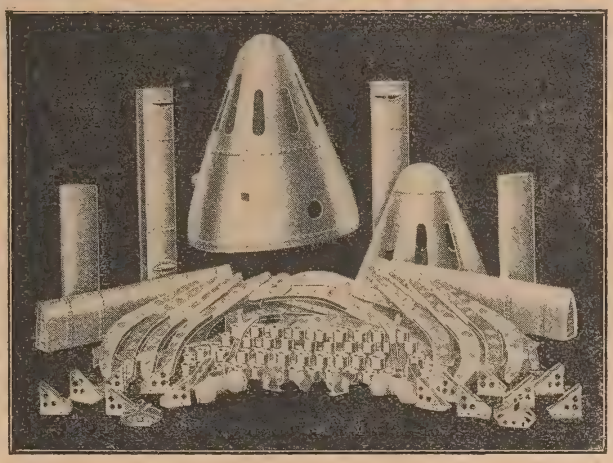
The following Cadets are granted temp commns. as Sec. Lts. (A.):—C. J. Johnson, Sept. 7th; G. W. H. De Carter, Sept. 8th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—S. W. W. Field, P. F. Bovingdon, July 16th; A. M. Duggan, Sept 4th; P. W. Johnson, H. H. Smith (date of first commn., March 18th). Sept. 14th; S. H. H. Swanton, P. G. Child, R. C. Stiven, Sept. 15th; C. L. Bowley, R. D. Connop, E. S. Banfield, H. A. Griffiths, Sept 16th; L. C. Cox, J. Aitken, H. R. Wright, Sept. 17th; E. Ackroyd, D. G. Bailey, A. W. Birch, Sept. 18th; W. N. Harrison, A. L. Courtney-Dunn, S. E. Burden, R. Sinclair, R. M. McGregor, J. F. Heydenrych, Sept. 19th; M. H. Leech, P. Addison, W. Kinghorn, G. P. Alexander, Sept. 22nd.

Sec. Lt. J. Gibson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A.), Sept. 15th.

The following P.F.O.'s (late R.N.A.S.) are granted temp. commn. as Sec. Lts. (A.):—H. C. Curtis, July 29th; A. E. Beilby, J. De F. Bailey, Sept. 7th; W. M. Cowper, Sept 13th; C. Shaw, Sept. 14th;

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R. B. Gotch, Sept. 15th; H. E. Foster, Sept. 16th; N. H. C. Loft, Sept. 17th; R. B. Stock, Sept. 18th; A. G. E. Briggs, Sept. 19th.

The following are granted temp. commns. as Sec. Lts. (A.) :—B. A. Whitmore (Lt., Saskachewan R., C.E.F.), and to be Hon. Lt., May 8th; H. E. A. E. Bolton (temp. Lt., Res. R. of Cav.), and to be Hon. Lt.; L. S. Davis (temp. Lt., R. Fus.), and to be Hon. Lt., July 16th; G. W. Heslam (temp. Sec. Lt., R. Muns. Fus.), Sept. 12th; A. Creswell (Lt., Saskatchewan R., C.E.F.), and to be Hon. Lt., Sept. 14th; H. L. W. Stevens (temp. Lt., R.W. Surr. R.), and to be Hon. Lt. : A. E. Boggiano, (Sec. Lt., Lpool. R., T.F.), Sept. 15th; F. McGraw (Lt., Brit. Columbia R., C.E.F.), and to be Hon. Lt.; H. H. Hunt (Sec. Lt., Lond. R., T.F.), Sept. 16th; C. G. Bateson (temp. Sec. Lt., W. York. R.), Sept. 18th; M. Savill, M.C. (Capt., Lond. R., T.F.), and to be Hon. Capt., Sept. 19th; J. W. New (Lt., Middx. R., T.F.), and to be Hon Lt., Sept. 19th; J. Cafferkey (Sec. Lt., Conn. Rang., Spec. Res.), Sept. 21st.

The Christian names of Edward Norman Fenton are as now described and not as in the "Gazette" Sept. 17th.

The notification in "Gazette" Sept. 13th concerning Lt. A. M. Campbell, R.F.A., Spec. Res., is cancelled.

Prob. Flt. Officer J. B. Davies (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (S.), Sept. 19th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (S.) :—R. G. Mathieson, W. T. Poole, Sept. 26th.

The following are granted temp. commns as Sec. Lts. (K.B.) :—W. F. List (Sec. Lt., Lond. R., T.F.), W. E. Pilgrim (Sec. Lt., Lond. R., T.F.), L. C. Spaven (temp. Sec. Lt., R. W. Surr. R.), Sept. 14th; W. F. Dollery (Sec. Lt., R.G.A., Spec. Res.), Sept. 17th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (K.B.) :—G. Gould, L. P. James, J. Murphy, L. B. Sifton, R. G. Smith, Sept. 25th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (K.B.) :—I. A. Bailey, C. W. Griffin, Sept. 14th.

The notification in "Gazette" Oct. 1st concerning Sec. Lt. T. A. Evans (late Gen. List, R.F.C., on prob.) is cancelled.

The notification in "Gazette" Aug. 20th concerning L. W. King is cancelled.

The notification in "Gazette" Aug 2nd concerning Sec. Lt. G. E. Hunt (York. L.I., T.F.) is cancelled.

The notification in "Gazette" Sept. 17th concerning Lt. J. Jackson (Norf. R.) is cancelled.

The notification in "Gazette" Sept. 17th concerning Sec. Lt. J. Hart (late Gen. List, R.F.C., on prob.) is cancelled.

Capt. S. Davenport to be Capt. (Dir.), from (T.), Sept. 18th.

Capt. J. H. P. Prain to be Capt. (Dir.), from (Ad.), Sept. 18th.

Lt. J. B. Anderson, M.C., to be Lt (Dir.), from (K.B.), Sept. 18th.

The following Lts. (Obsr. Officers) to be Lts. (Dir.) :—C. Dixon, H. V. Dorey, Sept. 18th.

Lt. C. W. Seymour-Hall (K.B.) to be Lt. (Dir.), April 10th, (substituted for notification in "Gazette," Sept 10th)

Temp. Capt. H. P. Valentine (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt (Dir.), and to be Hon. Capt., Sept 18th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Dir.) :—W. Hughes, A. E. C. Largen, R. S. Corbett, F. M. Phillips, J. R. N. Booth, Sept. 18th.

The following are granted temp. commns. as Sec. Lts. (Dir.) :—F. Cave-Brown-Cave (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt.; I. S. Bellis (Sec. Lt., R.W. Fus., T.F.); J. B. Windle (Lt., R.G.A., T.F.), and to be Hon. Lt.; G. S. Paterson (temp. Capt., R.G.A.), and to be Hon. Capt.; G. Cotton-Stapleton (temp. Sec. Lt. attd. Rif. Brig.); B. F. Wilmer (Lt., Essex Yeo., T.F.), and to be Hon. Lt., C. A. Chaplin (temp. Lt., R.F.A.), and to be Hon. Lt., Sept. 18th.

Prob Flt Officer F. E. King (late R.N.A.S.), is granted a temp. commn. as Sec. Lt. (Dir.), May 4th.

Sec Lt. J. D. Shotter to be Sec. Lt (Dir.), from (T.), June 24th.

Lt. A. D. Wright to be Lt. (Obsr. Officer), from (K.B.), Sept. 7th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—P. H. West (Lt., E. Surr. R., T.F.), and to be Hon. Lt., April 22nd; H. H. McColl, M.C. (temp. Capt., W. Rid. R.), and to be Hon. Capt.; W. Black, M.C. (temp. Lt., Camn. Highrs.), and to be Hon. Lt.; C. Frey, M.M. (Lt., Saskatchewan R., C.E.F.), and to be Hon. Lt.; R. E. Mathias (temp. Lt., Welsh R.), and to be Hon. Lt.; J. W. Partridge (temp. Sec. Lt., Northn. R.); C. H. Rice (Sec. Lt., Oxf. and Bucks, L.I., Spec. Res.), May 31st; A. G. L. Sidwell (Sec. Lt., R. Dub. Fus.), June 1st; C. B. Marshall (Lt., Norfhd Fus., T.F.), and to be Hon. Lt., June 12th; G. R. Herrett (temp. Sec. Lt., R. Suss. R.), Aug. 23rd; N. A. J. Ewen (temp. Lt., Lcic. R.), and to be Hon. Lt., Sept. 10th; F. Vaillant (Lt., Canadian Forestry Corps, C.E.F.), and to be Hon. Lt., Sept. 20th, (substituted for notification in "Gazette" Sept. 24th); L. B. Boyce (Lt., Lond. R., T.F.), and to be Hon. Lt., Sept. 20th (substituted for notification in "Gazette" Sept. 24th); H. Jardine, M.C. (Lt., C.F.A., C.E.F.), and to be Hon. Lt., G. P. Blake (temp. Lt., E. Kent R.), and to be Hon. Lt., E. D. Cameron (Lt., W. Ontario R.), and to be Hon.Lt., J. L. Sutherland (Lt. Cent. Ontario R., C.E.F.), and to Hon. Lt., Sept. 21st; M. C. Trench (temp. Lt., R.E.), and to be Hon. Lt., R. W. L. Thomson (Sec. Lt., High. L. I., T.F.), A. S. Robertson (Lt., New Brunswick R.), and to be Hon. Lt., L. E. G. Judge, M.C. (Sec. Lt., N. Lanc. R., T.F.), Sept. 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.), are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—F. Austin, S. A. Brabner, H. Bosher, S. Harvey, W. Marginson, H. G. Pope, A. Reid, W. Turner, E. G. Turner, H. E. Ford, May 31st; R. W. A. Brigden, Sept. 24th.

The following prob. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—D. L. Brocklesby, Aug. 4th; H. Hinchcliffe, Sept. 24th; D. B. Bright, Sept. 26th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—H. B. Elbourne, T. Fletcher, Aug. 23rd; J. A. Addison Aug. 30th; A. W. K. Brown, E. R. Cossar, Sept. 19th; A. Bates, Sept. 21st; E. Parrish, R. S. Donkin, H. D. Lewis, L. H. W. Gascoigne, J. E. Richards, Sept. 27th; W. Hall, A. L. Stewardson, Sept. 30th; R. A. Meek, R. A. Nicholas, J. Pamplin, C. H. Smith, A. Thurwood, G. K. Wood, D. Smith, Oct. 1st, W. V. Jackson, A. L. Price, W. H. Tresham, H. M. White, Oct. 2nd; G. P. Maffey, W. G. Anderson, W. H. Miller, G. C. Jenkins, W. H. Morrow, R. Darby, M. J. Clark, H. A Gill, J. O'Rourke, J. M. F. McDonald, W. J. Mabb, C. McIver-Campbell, Oct. 3rd; L. G. Brown, Oct 5th; E. W. King, E. G. De Carteret, E. C. Farmer, L. R. Robins, T. Aldred, G. A. Livett, Oct. 7th;

The surname of C. H. Thomas is as now described, and not "Thomson," as in "Gazette" Sept. 17th.

The Christian names of John William Brown are as now described, and not "William John," as in "Gazette" Sept. 27th.

Capt R. A. Walmisley relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Oct. 12th.

Capt. B. S. Lyons-Williams (3rd Bn., Wilts R., S.R.) relinquishes his commn on account of ill-health contracted on active service, Oct. 12th

Capt. E. J. McOustra resigns his commn. to resume his medical studies and is granted the hon. rank of Capt., Oct. 12th.

Lt. (temp. Capt.) D. H. Chamberlain relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Oct. 12th.

Lt. S. G. Robinson relinquishes his commn on account of ill-health contracted on active service, and is granted hon. rank of Lt., Oct. 12th.

Lt. W. E. Dexter (British Columbia R.) relinquishes his commn. on account of ill-health caused by wounds, Oct. 12th.

Lt. T. F. D. R. Aikman relinquishes his commn. on account of ill-health caused by wounds, and is granted hon. rank of Lt., Oct. 12th.

Lt. J. E. Cross (Manch. R., S.R.) relinquishes his commn. on account of ill-health caused by wounds, Oct. 12th.

Lt. P. B. Holgate relinquishes his commn. on account of ill-health, and is granted hon. rank of Lt., Oct. 12th.

Lt. C. E. Rushworth relinquishes his commn. on account of ill-health, and is granted hon. rank of Lt., Oct. 12th.

Lt. P. W. J. Harris relinquishes his commn., having been found permanently unfit for further instruction as Pilot or Obsr., Oct. 12th.

The following Sec. Lts. relinquish their commns., having been found permanently unfit for further instruction as Pilots or Obsrs. :—S. A. Hinde, W. J. Jowett, H. C. Hayes, R. J. L. Spinks, Oct. 12th.

Lt. R. D. Leigh-Pemberton, M.C. (Lt., Gren. Gds.), relinquishes his commn. on ceasing to be empld., July 8th.

Lt. V. C. Kirtly resigns his commn., Oct. 12th.

Administrative Branch.—To be temp. Majs while empld. as Majs. :—Lt. (temp. Capt.) W. H. Osman, Sept. 4th; Lt. (temp. Capt.) H. Waddington, Sept. 24th; Capt. F. E. Hellyer, from (S.O.), Oct. 12th.

Capt. T. C. Macaulay, M.C., to be Capt., from (S.O.), Aug. 31st.

Lts. to be temp. Capts. while empld. as Capts. :—A. H. Tarper (Aug. 1st); Hon. H. C. Smith, from (A.), Aug. 4th; A. D. Collins, Sept. 9th; C. T. Wilson from T., Sept. 16th; R. A. Denne, Hon. Capt. F. C. Smith, R. H. Grey, Oct. 1st.

Lt. (temp. Capt.) W. F. Merritt to retain his temp. rank while empld. as Capt., from (T.), May 7th.

Lts. to be Lts. :—C. B. D. Campbell, from (A.), Aug. 24th; C. O. Pocock, from (O.), Aug. 26th; D. H. Houston, from (A.), Sept. 1st; S Orchard, from (K.B.), W. L. S. Keith-Jopp, from (A.), R. St. J. Hartley, from (A.), Sept. 30th; F. W. Avison, from (K.B.), Oct. 1st; (Hon. Capt.) F. C. Townshead, from (A.), Oct. 10th; Sec. Lt. S. B. Browning to be temp. Lt. whilst empld. as Lt., Sept. 3rd.

To be Sec. Lts., and to be temp. Lts. whilst empld. as Lts. :— C. Guthrie, from (T.), (Hon. Lt.) D. A Childs, from (T.), G. Feeny, from (T.), June 30th.

L. J. Torrie (Capt., Ind. Army) is granted a temp. commn. as Capt., Aug. 11th.

C. W. Soden (temp. Maj., Manch. R.) is granted a temp. commn. as Lt., and to be Hon. Maj., Aug. 27th.

The following are granted temp. commns. as Lts. :—R. H. Grey (temp. Lt., R. Fus.), Sept. 27th; A. W. S Wagner (Hon. Lt., ret.), Oct. 7th; C. E. Crabbe, M.C. (late Capt., E. Ont. R., C.E.F.), and to be temp. Capt. whilst specially empld., Oct. 10th.

The following are granted temp. commns. as Lts. :—G. K. D. Simmons (Lt., E. Kent R., T.F.), Sept. 6th; Sir W. A. Ripley, Bt. (Lt., Res. of Officers), Sept. 21st; R. Macfarlane (temp. Lt., R. War. R.), Sept. 30th.

H. A. Plater is granted a temp. commn. as Sec. Lt., and to be temp. Lt. whilst specially empld., Oct. 10th.

The following are granted temp. commns. as Sec. Lts., and to be Hon. Lts. :—L. W. Park (Hon. Lt., ret.), A. D. E. Rippon (Hon. Lt., ret.), Oct. 10th.

The following are granted temp. commns. as Sec. Lts. :—W. E. Back, D. Craig, F. A. Owgan, W. A. Scott, E. W. Shaw, H. C. Wilkin, Oct. 7th; A. S. G. Baker, L. Collins, W. N. Crimp (prob Flt. Officer, late R.N.A.S.), P. F. Garnett, N. F. S. Hecht, L. J. Timms, Oct. 10th.

M. Worms is granted a temp. commn. as Sec. Lt., Oct. 7th, (substituted for notification in "Gazette" Sept 24th).

The Christian names of Ernest Edgar Blake are as now described, and not as in "Gazette" Oct. 1st.

The intials of Sec. Lt. (temp. Lt.) F. W. Poat are as now described, and not as in "Gazette" July 5th.

Capt. W. A. Knox (Capt., C.F.A., C.E.F.) relinquishes his commn. on ceasing to be empld., Oct. 1st.

Lt. (temp. Capt.) F. R. Dixon relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Oct. 12th.

Lt. F. L. Bradshaw (actg. Paymaster, R.N.R.) relinquishes his commn. on ceasing to be empld., Sept. 4th.

Lt. F. W. Berry relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 12th.

Sec. Lt. A. L. Hudson relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 12th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lts :—G. T. Rodda, W. R. Nichols, Oct. 12th.

The following Sec. Lts. resign their commns. having been found permanently unfit for further instruction as Pilot or Obsr. :—P. J. C. Johnson, T. C. Coulson, Oct. 12th.

Sec. Lt. W. E. Middleton relinquishes his commn. on account of ill-health, Oct. 12th.

Sec. Lt. R. J. Gilbert is removed from the service for absence without leave, July 14th.

Sec. Lt. E. G. Stephens (Warrant Victualling Officer, R.N.) relinquishes his commn. on ceasing to be empld., Aug. 17th.

Sec. Lt. (Hon. Lt.) E. G. T. Lowe (Lt., Som. L.I.) relinquishes his commn. on ceasing to be empld., Sept. 30th.

The notification in "Gazette" Sept. 10th concerning Sec. Lt. T. Bathurst is cancelled.

Technical Branch.—Maj. (temp. Lt.-Col.) R. Holloway, M.B.E., to retain the temp. rank of Lt.-Col. while empld as Lt.-Col., from (S.O.), Sept. 28th.

Capts. to be temp. Majs. while empld. as Majs. :—H. C. Mills, Aug. 28th; J. H. Banks, Sept. 19th; T. Martin, Sept. 20th; W. Millett, Sept. 30th.

Lts to be temp. Capts. whilst empld. as Capts. :—W. A. Hancock, April 13th; J. G. Connell, from (S.O.), Sept. 25th; A. R. Jones, Oct. 3rd; Sec. Lt. C. E. Amoore to be temp. Capt. whilst empld. as Capt., Aug. 22nd; Capt. W. Brass is reclassified as Lt. whilst empld. as Lt., from (K.B.), Sept. 30th; Sec. Lt. F. Woombell to be Lt. whilst empld. as Lt., Sept. 25th.

Sec. Lts. (temp. Lts.) (Ad.) to be Sec. Lts. (temp. Lts.) :—A. H. Dawson, T. Honnor, Aug 16th.

Sec. Lt. (Hon. Lt.) P. H. West to be Sec Lt., and to be Hon. Lt., from Obsr. Officer, July 27th (substituted for notification in "Gazette" Aug. 30th concerning Lt. P. H. West (E. Surr. R., T.F.).

The initials of R. G. L. Simpson are as now described and not as in "Gazette" Sept. 27th.

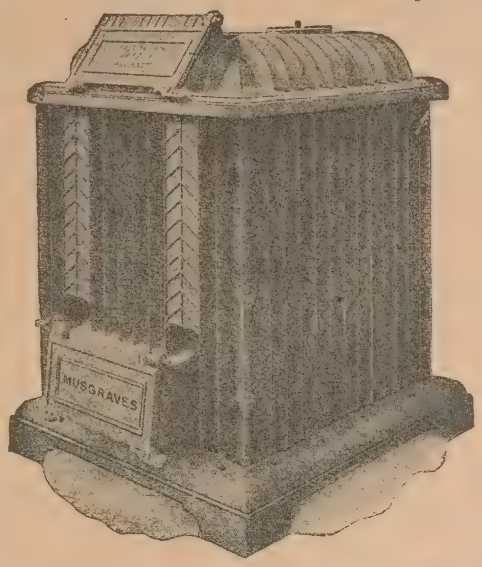
The initials of St. J. G. S. Clerke are as now described and not as in "Gazette" Sept. 27th.

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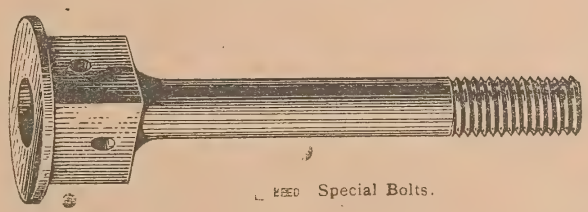
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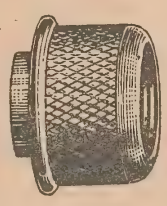
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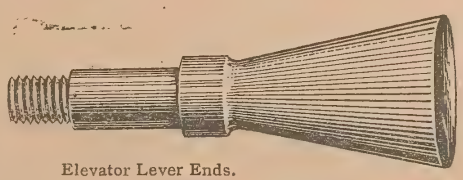
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The following are granted temp. commns. as Sec. Lts. :—W. G. Browne, S. E. Castle, G. T. Laverty, J. Tunnadine, Oct. 10th.

Capt. T. A. Cotton relinquishes his commn. on account of ill-health and is granted the hon. rank of Capt., Oct 12th.

Capt. A. M. Hughes relinquishes his commn. on account of ill-health caused by wounds and is granted the hon. rank of Capt., Oct. 12th.

Sec. Lt. J. H. Turner relinquishes his commn. on account of ill-health contracted on active service and is granted the hon. rank of Sec. Lt., Oct. 12th.

Sec. Lt. E. C. Stanners relinquishes his commn. on ceasing to be empld., Oct 2nd.

Medical Branch.—The following are granted temp. commns. as Capts. :—H. McW. Daniel, M. Murphy, W. Lessey (late Capt., R.A.M.C.), Oct. 10th.

The following are granted temp. commns. as Lts. :—T. Acton, Oct. 3rd; O. Hilton, Oct. 10th.

Dental Branch.—The following are granted temp. commns. as Lts. :—R. C. T Evetts, Oct. 7th; N. A. Goudge, Oct. 8th.

Memoranda.—Lt.-Col. (temp. Col.) R. S. Roy, C.M.G. (Comdr., R.N.) relinquishes his commn. on ceasing to be empld., Oct 1st.

Lt.-Col. H. T A. Bosanquet (actg. Comdr, R.N.) relinquishes his appt. and commn. on ceasing to be empld., Oct. 7th.

Capt. (temp. Maj.) W B. Adams relinquishes his appt and temp. rank, Sept. 30th.

Sec. Lt. (Hon. Lt.) S R. Proctor to be temp Capt while holding a special appt. at the Ministry of Munitions, Aug. 27th

Lt. C. A. H. Aspinall to take rank and prec. as if his appt. as Lt. bore date Aug. 10th.

The following are granted temp. hon. commns. as Lts. while empld. as Asst. Inspectors, A.I.D. :—A. V. Houghton, W. Sutton, Oct. 12th.

War Office, Oct. 15th.

His Majesty the King has been graciously pleased to approve of the award of the Military Cross to the under-mentioned officer in recognition of his gallantry and devotion to duty in the Field :—

Lt. Lancelot Harold Browning, R.F.A. and R.A.F.

For conspicuous gallantry and daring whilst carrying out independent bombing behind the enemy's lines. He was attacked by a fast enemy scout machine, which by skilful piloting and accurate shooting he drove down to its aerodrome. No sooner had the enemy aeroplane landed than Lt. Browning dropped a bomb, completely obliterating the pilot, who had started to run away, and damaging his machine. He then continued bombing, and while doing so was attacked by two more enemy scouts, both of which he drove off. He showed fine skill and courage throughout.

OFFICIAL COMMUNIQUES.

MILITARY.

G.H.Q. Communiqués.

Oct. 8th, 7.20 p.m.—On Oct. 7th bad weather again restricted flying operations, but some reconnaissance, photographic, and artillery observation work was successfully accomplished.

Nearly 13 tons of bombs were dropped by us on different targets. A German aerodrome and the railway near Lille were attacked from a very low altitude, our pilots supplementing their bombing attacks with vigorous machine-gun fire.

Hostile aircraft were active on the northern sector of the front, but showed little activity elsewhere. In air fighting nine German machines were destroyed, and one other was driven down out of control. One enemy balloon was shot down in flames.

Four of our machines are missing.

Two of the machines reported yesterday as missing on the 6th inst. have now been located.

No bombing operations could be carried out at night on account of weather conditions.

Oct. 9th, 7.40 p.m.—On Oct. 8th our squadrons actively continued their operations on the whole front. Close touch was kept with our advancing troops. Smoke curtains dropped around enemy strong points proved of great value. Many targets were reported to our artillery, and photographic and reconnaissance flights were carried out. Parties of the enemy's infantry and transport were scattered by machine-gun fire, and bombs directed upon them from low altitudes. Twenty-one tons of bombs were dropped by our aviators.

In air fighting, 10 German machines were destroyed and two driven down out of control. Two of the enemy's balloons were shot down in flames.

Seven of our machines are missing.

At night over 23½ tons of bombs were dropped by us on railways in the enemy's communications. Two trains were hit and derailed, and several large fires started in railway sidings.

All our night-flying machines have returned.

Oct. 10th, 7.10 p.m.—All branches of flying operations were energetically continued on October 9th.

Numerous targets were reported to our artillery. Observation of the resultant fire showed that much damage was caused and many fires and explosions started in enemy battery positions. Useful information was obtained, and a large number of photographs were brought in by our reconnaissance photographic machines. Close co-operation was kept with our advancing troops, and their movements reported to the headquarters concerned.

Squadrons of aircraft flew low over the retreating enemy, causing destruction and confusion in their columns by bombs and machine-gun fire. Railway junctions at Mons, Valenciennes, and Lille were attacked with bombs, and direct hits were observed on the permanent way. In all over 33 tons of bombs were dropped by us.

German aeroplanes showed activity, and considerable fighting in the air resulted. Twenty-one enemy machines were shot down and nine were driven down out of control.

Nine of our machines are missing.

The weather conditions at night prevented our night-bombing machines from carrying out their work.

Oct. 11th, 8.30 p.m.—Bad weather restricted flying operations on October 10th, but our low-flying machines actively continued to harass the retreating enemy with bombs and machine-gun fire. Over 12 tons of bombs were dropped by us.

Some successful reconnaissance and artillery observation work was accomplished, and several hundred photographs were taken.

German aircraft showed very little activity throughout the day. In air fighting two enemy machines were destroyed.

One of our machines failed to return.

On account of weather conditions, no night-bombing took place.

Oct. 12th, 7.20 p.m.—On October 11th flying operations were again greatly restricted on account of weather conditions.

Some reconnaissance work was successfully carried out, and our aeroplanes continued to keep close contact with our infantry. Our low-flying machines again inflicted casualties on parties of German infantry and columns of transport with bombs and machine-gun fire, dropping in all over nine tons of bombs.

There was very little activity on the part of the enemy's aeroplanes. One hostile machine was destroyed.

One of our machines is missing.

Low clouds and rain prevented flying at night.

Oct. 13th, 8.12 p.m.—On October 12th a thick mist and rain made flying operations extremely difficult. Two and three-quarter tons of bombs were dropped by our low-flying machines.

There was no decisive fighting in the air.

None of our machines is missing.

Weather conditions prevented night operations.

Oct. 14th, 7.40 p.m.—On October 13th, in spite of the mist and rain, valuable reconnaissances were successfully carried out by our contact machines at a very low height, and the enemy was continually harassed by bombs and machine-gun fire.

There was no air fighting, but one enemy machine was shot down in our lines by machine-gun fire from the ground.

One of our machines is missing.

At night the weather improved, and 12 tons of bombs were dropped by us on important railway communications.

One of our night-bombing machines failed to return.

The Flanders group of Armies under the command of His Majesty the King of the Belgians attacked this morning at 5.35 a.m.

British, Belgian, and French aviators played a great part in the battle, bombing enemy concentrations and trains on the move, and also machine-gunning enemy infantry.

War Office Communiqués.

Oct. 8th.—The G.O.C. the British Forces in Palestine reports :—

At 2 p.m. on Oct. 6th Zahle and Rayak were occupied by our cavalry. The railway station and aerodrome had been burnt by the retreating enemy prior to evacuation.

Oct. 11th.—The G.O.C. British Forces in Italy reports :—

During the past week the hostile aerodromes at Campoformido (south of Udine) and Egna have been attacked with bombs and machine-guns from the air. Several hangars, as well as aeroplanes on the ground, were destroyed. On each occasion hits were obtained on a train, and the occupants escaping from these trains machine-gunned from the air.

In air fighting six enemy machines have been destroyed.

Four of our machines are missing.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the Royal Air Force, Independent Force, in France :—

Oct. 9th.—On the morning of the 9th inst. our squadrons heavily bombed the railways at Metz-Sablon. One direct hit was obtained on two trains and 19 others on workshops, sidings, and railway lines.

All our machines returned.

Oct. 10th.—On the night of October 9th-10th our machines heavily attacked the railways at Mézières, Metz-Sablon, and Thionville, and Frescaty and Morhange aerodromes.

Good results were observed at Mézières. Five direct hits were obtained on the railway at Metz-Sablon and a fire was caused. At Thionville two direct hits were obtained on the railway and four on the Karlshutte works. Twelve and a half tons of bombs were dropped.

All our machines returned.

To-day, Metz-Sablon was again heavily attacked. Five direct hits were obtained on the railway triangle and one on the bridge over the railway.

No machines are missing.

Oct. 11th.—On the night of the 10th-11th inst., our machines, in spite of thick mists, attacked the railways at Thionville, Metz-Sablon, and Mézières, the blast furnaces at Rombach, and the hostile aerodrome at Frescaty.

All our machines returned.

THE CASUALTY LIST.

NAVAL.

Reported Oct. 14th.

Previously reported Missing, believed Killed, now reported Killed.—Armstrong, Flt. Comdr. F. C., D.S.C., R.N.

MILITARY.

Reported Oct. 9th.

Canadian Force.—Killed.—O'Reilly, Lt. R. H., Can. Eng., attd. R.A.F.

Previously reported Missing, now reported by German Government Killed or Died of Wounds.—Kinton, Lt. C. E., N.S. R., attd. R.A.F.

Missing.—James, Lt. L. R., B.C. R., attd. R.A.F ; MacDonald, Lt. R. M., Man. R., attd. R.A.F.

Previously reported Missing, now reported Prisoner in German Hands.—Gilmour, Lt. L. C., Sask. R., attd R.A.F.

* * *

The following British officers have arrived in Holland from Germany for internment :—

Heywood, Sec. Lt. L. R., R.E., R.F.C.; Halford, Lt. E. A., Wilts R., attd. R.F.C.; Pearson, Lt. L. J., R.E., attd. R.A.F.

Reported Oct. 10th.

Australian Force.—Died of Wounds.—Machin, Sec. Lt. R. F. C., F.C.

Missing.—Cox, Lt. G., F.C.; Jeffers, Lt J. P., F.C.; Peel, Sec. Lt. J. C., F.C.

Reported Oct. 11th.

Australian Force.—Killed.—Walsh, Lt. P. G., F.C.

Canadian Force.—Missing.—Gross, Lt. C. R., Man. R., attd. R.A.F.

* * *

The following officer, who was a prisoner in Germany, has now arrived in England :—

Cook, Sec. Lt. L. C. L., A.S.C., attd. R.A.F.

Reported Oct. 12th.

Wounded.—McCloughry, Capt. E. J., F.C.

Reported Oct. 14th.

Previously reported Missing, now reported Died of Wounds as Prisoner in German Hands.—Stanton, Lt. V. G., R.F.C.

Previously reported Prisoner, now reported Died of Wounds as Prisoner in German Hands.—Edmonds, Sec. Lt. E. P. P., R.F.C.

Mr. SANDOW ON NEURASTHENIA.

How and Why Natural Methods Relieve and Overcome it.

"Nervous people," says Dr. A. T. Schofield, "are the very salt of the earth. They are men with brains that thrill, that feel, that are very quick in action, firm, clear, and of high organisation."

The nervous, in the true meaning of the term, mean those strong and rich in nerve power.

In every occupation and profession, such men and women take the lead. They are always "on the stretch." They work quicker, better and often longer than those of cruder constitution and ruder health. This is why they are the most frequent victims of neurasthenia, that most agonising of ailments, half mental and half physical, that denudes a person of strength and makes him the prey of a thousand vague fears, emotions and feelings. It is peculiarly the disease of the mental and sedentary worker, the high-strung, the sensitive and the refined. No sufferers deserve more sympathy, none receive less, for the symptoms are mostly mental and subjective, betraying little of the anguish they provoke except to the victim.

A great authority has truly said that "the man or woman suffering from nervous exhaustion is to my mind the most unfortunate individual in creation. It is a condition that is not sufficiently understood and studied even by medical men. The whole world seems unkind to these people. Their faith in humanity is destroyed."

There are many symptoms—one great nearologist enumerates no less than 150. Some of the most common are:—

CRAVING FOR EXCITEMENT AND NOVELTY.
MUSCULAR TREMORS AND CONTRACTIONS.
FEAR OF CLOSED OR OPEN SPACES.
INDECISION AND LOSS OF SELF-CONFIDENCE.
STRANGE SENSATIONS ON THE SKIN.
SUDDEN AND ALMOST IRRESISTIBLE IMPULSES.
DREAD OF INSANITY OR PARALYSIS.
OVER-SENSITIVENESS AND TIMIDITY.
DISTRUST IN AND SUSPICION OF OTHERS.
INCAPACITY FOR SUSTAINED EFFORT.
IMPAIRED MEMORY AND WILL POWER.
PAIN OR STIFFNESS AT THE BACK OF NECK.
HEADACHE WITH SENSE OF WEIGHT OR CONSTRICTION.
FEAR OF CROWDS OR OF BEING ALONE.
INTENSE SELF-CONSCIOUSNESS.

The treatment and cure of this condition has so far defied orthodox medical methods, and the greatest neurologists now agree that nature alone can cure by natural methods of increasing nerve-nutrition and nerve-power. In my treatise on "Nervous Disorders," which I will gladly send free to any applicant, there is much that will appeal to the neurasthenic and will be of a helpful nature. I show why natural methods of treatment are the only real and permanent remedial methods in this condition, because they improve the nutrition and functional action of all the great nerve-centres. They do this easily, naturally and pleasantly, without causing the least fatigue or overstrain, and the methods I advise and employ only take up a few minutes daily.

Everyone threatened with, or suffering from, Neurasthenia should write to me for a copy of my treatise, "Nervous Disorders," in which I am able to describe this condition and its evil effects in much greater detail, and in which I show them how, by simply carrying out my advice for a few minutes daily, they can overcome Neurasthenia and allied disorders by natural means only. They can do this in their own home, without even the necessity of a single visit to my London Institute, and with as perfect satisfaction Thousands upon thousands in all parts of the world have been benefited in this way and by correspondence alone.

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Cut out and send this coupon with your name, address, occupation, age and length of time suffering, and free copy of my treatise on "Nervous Disorders" will be sent you. Write the above particulars on a plain sheet of paper and post to Mr. Sandow, Sandow's Curative Institute, Ltd., 32a, St. James' Street, London, S.W.1. AEROPLANE 16/10/18

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Reported Oct. 15th.

AUSTRALIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Woolhouse, Lt. F. S., F.C.

AIR FORCE.

Reported Oct. 10th.

KILLED.—Blackie, Lt. A. W., R.A.F.
Clark, Sec. Lt. S., R.A.F.
MacLean, Lt. A. P., R. Scots and R.A.F.
Morris, Capt. N. P., R.A.F.
DIED OF WOUNDS.—Browning, Sec. Lt. F. A., R.A.F.
PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.—Aldred, Sec. Lt. W. B., R.A.F.
WOUNDED.—Cockman, Lt. H. J., R.A.F.; McKeever, Sec. Lt. S., R.A.F.; Oliphant, Sec. Lt. J. L. McI., R.A.F.; Poulton, Sec. Lt. M. J., R.A.F.; Preston, Lt. J. C., R.A.F.; Wood, Sec. Lt. E., R.A.F.
MISSING.—Abrahams, Sec. Lt. C. R. G., R.A.F.; Bartlett, Sec. Lt. G. R., R.A.F.; Buckby, Sec Lt. R., R.A.F.; Cook, Lt. F. O., R.A.F.; Furguson, Sec. Lt. J. S., R.A.F.; Gilbert, Lt S. C., R.A.F.; Gillett, Sec. Lt. W. H. C., R.A.F.; Harper, Sec. Lt. G. V., R.A.F.; Heyes, Sec. Lt. A. C., Roy. Fus. and R.A.F.; Lindley, Capt. A., R.A.F.; Lloyd, Lt. C. B. E., R.A.F.; Malcolm, Lt. O. L., R.A.F.; Orange, Sec. Lt. H. S., R.A.F.; Pretty, Sec. Lt R. C., R.A.F.; Provan, Sec. Lt. A., R.A.F.; Robinson, Sec. Lt. A. J., R.A.F.; Sharp, Sec. Lt. C. H., Norf. R., attd. R.A.F.; Swann, Sec Lt. T. H., R.A.F.; Welchman, Capt. P. E., M.C., D.F.C., K. O Sco Bord. and R.A.F.
CADETS KILLED.—Burt, T.
Denton, J. E.
Evans, E. H
Heritage, E. W.
Iddon, S. R.
Jones, L. S.
Jones, W. R.
CORRIGENDUM.—In list No. 136, dated Oct. 9th, the casualty heading for the correction to Lt. Tidmarsh should be Killed.

Reported Oct. 11th.

KILLED.—Birrell, Sec. Lt. A. E., R.A.F
Bruce, Lt. N., R.A.F.
Crochett, Lt W. J., R.A.F.
Lord, Lt E. O., R.A.F.
DIED OF WOUNDS.—Spargo, Sec. Lt. P. G., R.A.F
WOUNDED.—Anderson, Sec. Lt. E., R.A.F.; Gordon-Bennett, Lt. R., H.C. and R.A.F.; Coombs, Lt. W. E. C., R.A.F.; Durie, Sec. Lt. J., R.A.F.; McCormack, Lt. G., R. Ir. R. and R.A.F.; Moore, Capt. G. N., R.A.F.
MISSING.—Armstrong, Sec. Lt. R. H., R.A.F.; Brooke, Lt. L. S., R.A.F.; Brown, Sec. Lt. J. W., R.A.F.; Burnett, Sec. Lt. R. R., R.A.F.; Cavers, Lt. J. P., R.A.F.; Cosgrove, Sec. Lt A. V., R.A.F.; Crawford, Capt. C., R.A.F; Crossley, Sec. Lt. H., R.A.F.; Cullen, Lt. A. A., R.A.F.; Dunlop, Sec. Lt. G. B., R.A.F.; Dunn, Sec. Lt. J. B., R.A.F.; Elwig, Sec. Lt. H. J. C., R.A.F.; Harrison, Sec. Lt. C. A., R.A.F.; Parkinson, Lt. J. A., R. Lanc. R. and R.A.F.; Read, Sec. Lt. S. C., R.A.F.; Robinson, Lt. W. F. R., R.A.F.; Sanderson, Sec. Lt. C. B., R.A.F.; Stern, Sec. Lt. L. G., R.A.F.; Strange, Capt. G. J., Dorset R., attd. R.A.F.

Reported Oct. 12th.

KILLED.—Driver, Lt. H. W., R.A.F.
Dudley-Scott, Lt. H. K., R.A.F.
Hawkeswell, Lt. L. B., W. Yorks. R. and R.A.F.
Lind, Sec. Lt. J. V., R.A.F.
McDougall, Sec. Lt. B. C., R.A.F.
Stevens, Sec. Lt. A. J., R.A.F.
WOUNDED.—Abraham, Sec. Lt. J. B., R.A.F.; Chinery, Sec. Lt. B. V., R.A.F.; Finch, Sec. Lt. W. E., R.A.F.; Gadd, Lt. M. E., R.A.F.; Gardiner, P.F.O. T. J., R.A.F.; Gates, Capt. G. B., R.A.F.; Jenkinson, Lt. R., R.A.F.; Lally, Capt. C. G., R.A.F.; McKenzie, Lt. J. V., R.A.F.; Ormerod, Capt. G. I., R.A.F.; Pernet, Lt. E. G., R.A.F.; Voght, Sec. Lt A. A. E., King's (Lpool. R.), and R.A.F.; Young, P.F.O. J. R., R.A.F.
MISSING.—Brett, Sec. Lt. W. A., R.A.F.; Eyre, Lt. A. N., Sher. For. and R.A.F.; Fulford, Lt. E., R.A.F.; Harvey, Sec. Lt. E. S., R.A.F.; Pym, Lt. F. G., R.A.F.; Smith, Sec Lt. L. G., R.A.F.; Thornton, Sec. Lt. W. R., R.A.F.; Turner, Sec. Lt F E., W. Yorks. R. and R.A.F.; Walker, Sec. Lt. H., R.A.F.
INTERNED.—Fisher, Sec. Lt. C. C., R.A.F.; Kingham, Sec. Lt. R. L., R.A.F.; Locke, Sec. Lt. C. J., R.A.F.; Oakley, Sec. Lt. R. S., R.A.F.; Olorenshaw, Sec. Lt. J., R.A.F.
MISSING, BELIEVED DROWNED.—Shier, Sec. Lt. M. R., R.A.F.
Whitehead, Lt. J., R.A.F.

Reported Oct. 15th.

KILLED.—Anderson, Lt. G., R.A.F.
Ashwin, Lt. G. A. J., R.A.F.
Band, Sec. Lt. R. F. G., R.A.F.
Butterworth, Sec. Lt. F., W. Yorks. R. and R.A.F.
Caldwell, Sec. Lt. R. R., R.A.F.
Calderwood, Sec. Lt. D. M., R.A.F.
McGibbon, Sec. Lt. D. H., R.A.F.
WOUNDED.—Allan, Sec. Lt. C. M., R.A.F.; Cooke, Lt. W., W. Yorks. R. and R.A.F.; Dickens, Sec. Lt. G. J., R.A.F.; Eyres, Lt. L. H., R.A.F.; Hunter, Sec. Lt. R. F., R.A.F.; Kennan, Sec. Lt. S., R.A.F.; McLeod, Sec. Lt. R. L., R.A.F.; Matthews, Sec. Lt. H. M., R.A.F.; Nicole, Sec. Lt. J., Rif. Brig. and R.A.F.; Speaks, Lt. J. C., R.A.F.; Symes, Sec. Lt. A. L., R.A.F.; Westall, Lt. A., Manch. R., T.F., and R.A.F.; Wilkinson, Sec. Lt. C., R.A.F.
MISSING.—Johnson, Sec. Lt. W. J., R.A.F.; MacKenzie, Lt. G. O., R.A.F.; Manley, Sec. Lt. P. S., R.A.F.; Sheldrake, Sec. Lt. A. T., H.L.I. and R.A.F.; Shum, Sec. Lt. B. G., R.A.F.; Thomson, Sec. Lt. D. A., R.A.F.; Thompson, Capt. S. F. H., M.C., D.F.C., R.A.F., Tolman, Sec., Lt. C. J., R.A.F.; Wilcox, Sec. Lt. C. H. R.A.F.

Reported Oct. 16th.

KILLED.—Belyea, Sec. Lt. A. F., R.A.F.
Dixon, Sec. Lt. C., R.A.F.
Stanley, Sec. Lt. C. G., R. War. and R.A.F.
Thompson, Sec. Lt. A. H., R.A.F.
Willis, Sec. Lt. F. J. H., R.A.F.
Wilson, Sec. Lt. W. H., R.A.F.
DIED OF WOUNDS.—Theron, Lt. W., R.A.F
WOUNDED.—Frank, Lt. C. L., R.A.F.; Lisle, Lt. C. F. J., R.A.F.; Robinson, Sec. Lt. C. E., R.A.F.; Russell, Sec. Lt. J. B., R.A.F.; Skinner, Sec. Lt. L. J., R.A.F.; Austin-Sparkes, Capt. J., R.A.F.; Sangster, Lt. J., R.A.F.
MISSING.—Brooks, Sec. Lt. W. J., R.A.F.; Brown, Sec. Lt. T., R.A.F.; Cawley, Sec. Lt. C. F., R.A.F.; Cooke, Lt. P. B., R.A.F.; Dougan, Sec. Lt. W. L., R.A.F.; Drake, Capt. E. E., R.A.F.; Elstead, Lt. F., R.A.F.; Elworthy, Lt. L. M., Essex R. and R.A.F.; Hewat, Sec. Lt. H. B., R.A.F.; Hoy, Capt. E. C., R.A.F.; MacLennan, Lt. J. McM., R.A.F.; Malcolmson, Sec. Lt. J. C., R.A.F.; Mitchell, Sec. Lt. W., R.A.F.; Mitten, Sec. Lt. R. C., R.A.F.; O'Leary, Lt. D. A., R.A.F.; Rolfe, Lt. B. R., R.A.F.; Smith, Capt A. F., R.A.F.
CORRECTION.—KILLED.—Coleman, Sec. Lt. L., R.A.F., should read Coleman, Lt. L., R.A.F.

CASUALTIES AMONG W.Os., N.C.Os., AND MEN OF THE R.A.F
THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

Oct. 12th.—Davies 10397 Air Mech., 3rd Cl., F. W. (Oxford); Stewart 93551 Serjt.-Mech. A. M. (Granton-on Spey).
Oct. 14th.—Marsham 4413 1st Air Mech. J. (Copnor, Portsmouth).

DIED OF WOUNDS.

Oct. 12th.—Brown 42159 Cpl.-Mech. F. (South Norwood); Wilson 52392 Air Mech., 3rd Cl., R. (Bradford); Wymark 16585 Cpl.-Mech. J. W. (Earlsfield, S.W.).
Oct. 14th.—Devan 54503 3rd Air Mech. P. (Dublin); Walker, 4650 1st Air Mech. R. (Woodhouse, Leeds).

DIED.

Oct. 14th.—Levy 210909 Pte. S. (London); Smith 102945 3rd Air Mech. S. A. G. (Bridgwater, Somerset).

DROWNED.

Oct. 14th.—Turner 213962 1st Pte. S. (Isleworth).

WOUNDED.

Oct. 12th.—Allen 202615 Serjt.-Obsr. L. A. (Warwickshire); Duggan 96942 1st Pte. M. (Middlesboro); Duke 102339 2nd Pte. A. (Hastings); Ludlow 18387 Cpl.-Mech. F. (Haggerston, N.E.); McArd 40888 Air Mech., 3rd Cl., C. (Kensington); MacDonald 92758 Air Mech., 3rd Cl., I. L. (Edinburgh); MacDonald P/765303 Serjt.-Mech. J. S. (Jesmond, Newcastle); Norridge 8940 Air Mech., 1st Cl., W. G. (E. Croydon); Robinson 103655 Air Mech., 3rd Cl., A. R. (Edgbaston); Smith 48448 Air Mech., 3rd Cl., T. (Southampton); Sparks 24970 Air Mech., 3rd Cl., I. F. (Sidmouth); Teakle 17991 Air Mech., 1st Cl., A. (Westminster, S.W.).
Oct. 14th.—Aldridge 221995 Serjt.-Mech. E. (Chelsea); Hills 28531 1st Air Mech. G. R. (Maidenhead); McDonald 99288 3rd Air Mech. D. (Stornoway); Nicholson 52281 3rd Air Mech. F. T. (Guildford); Roberts 25767 1st Pte. W. H. (Litherland); Wood 38848 1st Pte. C. T. (Wood Green).

MISSING.

Oct. 12th.—Hall 221638 1st Pte. G. (Longsight, Manchester); Haigh 99729 Serjt.-Mech. A. (Huddersfield); Sear 94433 Serjt-Mech. R. (Northampton); West 114643 Serjt.-Mech. J. (Birmingham).
Oct. 14th.—Copley 219631 AC/A.G. W. (Stratford, E.); Harrop 99238 Serjt.-Mech. W., M.M. (Marple, Cheshire); Hookway 61856 1st Pte. S. (Bideford); Tex 12698 Serjt. A. (Peterborough); Murphy 237023 Serjt.-Mech. L. (Stockport); Pettit 225270 3rd Air Mech. W/T J. C. (Northampton); Thomson 100105 Serjt.-Pilot F. S. (Liverpool.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER OF WAR.
Oct. 14th.—Aldridge 7044 Serjt.-Pilot H. D. (Leigh-on-Sea).

PERSONAL NOTICES.

MILITARY.

DEATHS.

AIZLEWOOD.—Maj. Leslie Peech Aizlewood M.C., R.A.F., who was accidentally killed while flying over the sea on Sept. 29th, was the only son of Mr. and Mrs. A. Percy Aizlewood, of Blenheim, Rotherham. Born in 1895, he was educated at Uppingham School, and afterwards studied mechanical and electrical engineering at Sheffield University and Parkgate Iron and Steel Works. He received a commission in the York and Lancaster Regt., and on the day he was 17 he entered on active military service at the outbreak of war and served in France from April to July, 1915. After being invalided home he joined the Royal Flying Corps, and flew oversea to France in July, 1916. In the following September he singly engaged five enemy aeroplanes, crashed into one, brought it down in the sight of both armies, and although his own machine was damaged by the impact he brought it into our lines. For this deed and his daring, enterprise, and fearlessness he was awarded the Military Cross. After being made flight commander he was wounded in France, and on return home did valuable work in establishing and conducting

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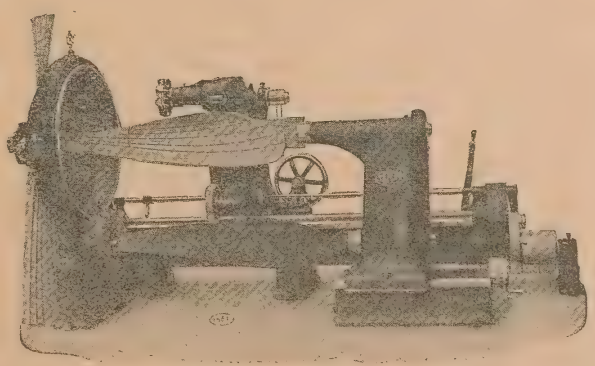
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aerodromes in Scotland and England and in training men for the R.A.F. Last March he was mentioned in the "Gazette" for valuable services rendered.

HAYNES.—Capt. Harold Haynes, D.S.O., 6th Yorks Regt., attd. R.A.F., was accidentally killed on Sept. 26th, in his 23rd year. Educated at St. Peter's School, York, he joined the Army in 1914, and was torpedoed on his way out to the Dardanelles in June, 1915. From 1915 to October, 1916, he was attached to the 10th Yorks Regt., during which time he was doing intelligence work for the Secret Service, and was wounded in France in 1916. In October of the same year he was transferred to the R.A.F., and succeeded in bringing down one of the Gothas which were over London in the raid of last May. Capt. Haynes was the son of Mr. E. Haynes and grandson of Mrs. Cadman, of Wath-on-Dearne, Yorks.

LUCAS.—Lt. Humphry William Herbert Lucas, M.C., R.A.F., whose death was announced last week, was 25 years of age and was the second son of the late Capt. B. W. Lucas, of the old 59th Regiment, and Mrs. Lucas, of The Grove, Coulsden. He was educated at Christ's Hospital, and on leaving enlisted in the Westminster Dragoons (Territorial) and on mobilisation, in August, 1914, went to Egypt with his regiment, afterwards going through the Gallipoli campaign. On his return to Egypt he was given a commission in a battalion of the Middlesex Regiment, which he joined at Salonika, where he won the M.C. and was also mentioned in dispatches. He transferred to the R.F.C., October, 1917, and after qualifying as a pilot in Egypt returned to England and was employed in the Air Defence Force until his fatal accident occurred.

PARTRIDGE.—Lt. Henry Treneman Partridge, R.A.F., killed at Heliopolis, Cairo, as the result of an aeroplane accident, on July 14th, six days before his 21st birthday, was the eldest son of Mr. and Mrs. H. S. Partridge, of 83, Pendle Road, Streatham. He was educated at Alleyn's School (Brading's House), and was house prefect, captain of house shooting team, and vice-captain of school shooting team. He left school and joined the Inns of Court O.T.C. in March, 1915, and was gazetted to the Royal Sussex Regt. in July, 1915. He served in the Palestine campaign of last year, and took part in the attacks on Gaza and the subsequent advance to Jerusalem. Transferring to the Royal Air Force in January this year, he trained in Egypt.

PRETTY.—Sec. Lt. Reginald Charles Pretty, R.A.F., reported missing, was born in 1900, and when 15 he joined the Westminster Dragoons, serving first in Egypt and afterwards in France. Before he reached the age of 18 he got a commission in the R.A.F., and had only been flying in France a few months when his machine was seen to descend behind the enemy's lines.

Engagement.

HAMILTON—TURNER.—An engagement is announced between Lt. R. N. Hamilton, Yeo. and R.A.F., eldest son of the late J. G. Hamilton, M.V.O., of Northdene, Johannesburg, and Mrs. Hamilton, High Beech, Oatlands Park, and Olive Mary, third daughter of Mr. and Mrs. H. J. Turner, Braziers End, Tring.

Marriages.

BELFIELD—HENEY.—Capt. A. G. N. Belfield, R.A.F., formerly of the Devonshire Regt., only son of Mr. Arthur Belfield, 5, Kensington Square Mansions, was married at the Chapel Royal, Savoy, to Clarice, only daughter of Mr and Mrs. Heney, 30, Devonfield Road, S.W., on Oct. 9th, the Rev. Hugh Chapman officiated.

BULLOCK—HEATH.—On Oct. 8th, at the Church of the Holy Trinity, Paddington, Capt. Herbert John Bullock, Norfolk Regt. and R.A.F., son of the late Herbert Bullock, of Winslow, Bucks, was married to Pearl, widow of Colonel P. M. Heath, I.A., and daughter of the late General St. John Richardson, Indian Army, by the Rev. Cecil White.

THORN—GREENE.—On Oct. 10th, Lt. Frederick Charles Thorn, Lincolnshire Regt., eldest son of the late Frederick Thorn and Mrs. Thorn, was married to Aileen Henrietta Greene, younger daughter of Lt. Henry Bertram Greene, R.A.F. (Medical Branch), and Mrs. Greene, of 307, Trinity Road, Wandsworth Common, S.W.

Births.

ASHMORE.—On Oct. 6th, at 7, Radley Road, Abingdon, the wife of Lt. G. M. Ashmore, D.C.M., Hants Regt. and R.A.F., of a daughter.

LEIDIG.—On Oct. 7th, at 14, Rosemont Road, Acton, W.3, to the wife of Lt. W. A. M. Leidig, Worcester Regt. and R.A.F. —a daughter.

YOUNG.—On Oct. 9th, at 38, Pont Street, the wife of Major W. G. P. Young (Res. of Cav. and R.A.F.)—a daughter.

AIR FORCE.

Deaths.

BENNETT.—Lt. Risdon M. Bennett, R.A.F., who was killed in action on Sept. 28th, was the elder son of Dr. and Mrs. Bennett, The Corner House, Beckenham. He was 18¾ years of age.

DEARDS.—Lt. Charles Deards, R.A.F., who died on Oct. 5th, at a hospital in France, was the younger surviving son of the late Alfred Deards and Mrs. Deards, of Prospect Hill, Walthamstow; also of 31, Bedford Row, W.C. He was 37 years of age.

GARDNER.—Capt. C. V. Gardner, R.A.F., who was recently awarded the D.F.C., has died of wounds received while flying over the German lines. He was a prominent Egham tradesman, and closed his ironmongery business for the duration of the war to permit of his joining the forces.

HERBERT.—Sec. Lt. Robert Stannard Herbert, R.A.F., who was killed while flying, was the only son of Mr. and Mrs. Leonard Herbert, 18, Argyll Mansions, Addison Bridge, W.14. He was 19 years of age.

HICKEY.—Capt. Charles Robert Reeves Hickey, D.F.C., R.A.F., who was killed in a collision on Oct. 3rd, was the eldest son of Maj. Robert Hume Fayrer Hickey, of Parksville, Vancouver Island. He was 21 years of age.

MONK.—Lt. H. I. M. Monk, R.A.F., who was killed while flying on Oct. 1st, was the son of Mr. and Mrs. H. E. Monk, 59a, Golders Green Road, N.W. He was 22 years of age.

TALBOT.—Sec. Lt. Ralph Frederick Talbot, R.A.F., who was killed in action on Sept. 2nd, was the second son of Arthur Warburton Talbot, of Montreal, and formerly of Deal. He was 20 years of age.

WAYMAN.—Sec. Lt. R. F. Wayman, R.A.F., who was accidentally killed whilst flying on Sept. 23rd, was the eldest son of Mr. and Mrs. W. F. Wayman, "Hillside," Monkhama Drive, Woodford Green, Essex. He was 27 years of age and had seen four years' active service.

WRIGHT.—Flt. Cadet Hector Campbell Wright, R.A.F., who died on Sept. 29th as the result of an aeroplane accident, was the only son of Alice Fordyce-Wright and the late Arthur Fordyce-Wright, of 59, Morningside Avenue, New York City, and grandson of the late Reverend W. P. A. Campbell, Rector of Fladbury, Worcestershire. He was 18 years of age.

Engagement.

GARNAR—HOLDEN.—The engagement is announced between Lt. Sydney R. Garnar, R.A.F., son of Sydney T. Garnar, of Meadow View, Beckenham, and Rowena, youngest daughter of Robert H. Holden, Villestre, Rushall, and granddaughter of Sir Edward Holden, Glenelly, Walsall, and of the late Sir Benjamin Stone, The Grange, Erdington

Marriage.

ATKINSON—DAINTREE.—The marriage arranged between Lt. Geoffrey Murland Atkinson, R.A.F., and Miss Mary Agnes Francis Daintree, 46, Elgin Crescent, W.11, took place at S. Augustine's, Stepney (Aldgate)), on Oct. 16th.

Births.

BARNBY.—On Oct. 12th, at The Cottage, South Rauceby, near Grantham, Lincolnshire, to Allis, wife of Lt.-Col. A. C. Barnby, R.A.F.—a daughter.

BRYANS.—On Oct. 7th, at Toronto, Canada, the wife of Capt. W. B. Bryans, R.A.F., of a daughter.

GOODACRE.—On Oct. 10th, at 8, Colinette Road, Putney, S.W., the wife of Sec. Lt. Frank L. Goodacre, R.A.F., of a daughter.

HARROLD.—On Oct. 10th, at Fairholme, Braunton, Barnstaple, North Devon, to Maud, the wife of Cpl. H. H. Harrold, R.A.F., Dundee, of a son (Arthur George).

RABAGLIATI.—On Oct. 8th, 1918, at "Velindre," Aspley Heath, Woburn Sands, the wife of Capt. H. V. Rabagliati, R.A.F., a daughter.

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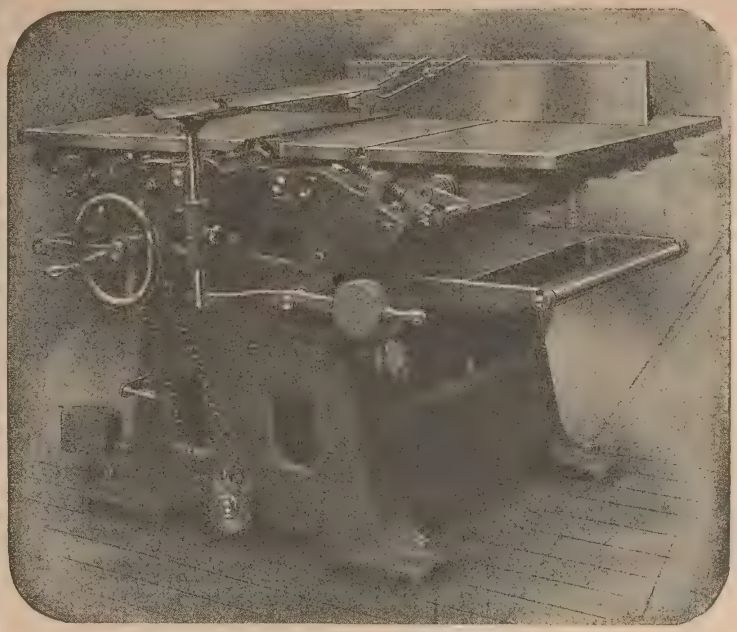
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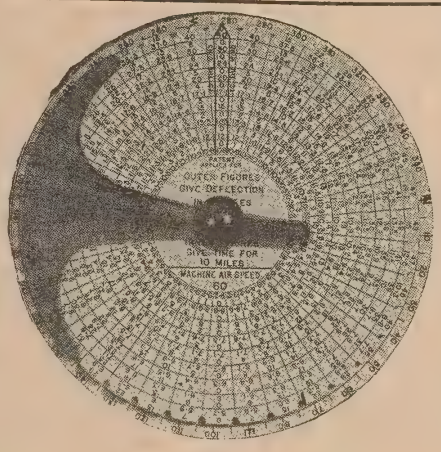
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TURTON.—On Oct. 5th, at Toronto, Canada, the wife of Capt. G. A. Turton, R.A.F., of a son.

WALLER.—On Oct. 7th, at 5, Farrer Road, Hornsey, the wife of Lt. Stanley H. C. Waller, R.A.F., a son.

* * *

Sec. Lt. Leslie Campbell Story, R.A.F., has been missing since July. Any information regarding him will be gratefully received at Lumgair Park House, 83, London Road, Peterborough.

* * *

Lt. John Weston Warner, R.A.F., who was reported missing on Oct. 4th, had been flying on the Western Front. Will those writing to prisoners of war or hospitals in Germany please inquire for news of him? Information will be gratefully received by Miss Warner, Docklands, Thorp Arch, Boston Spa, Yorks.

* * *

Capt. Kenneth Charles Mills, R.A.F., has been missing since Aug. 8th. Will those writing to prisoners of war, or hospitals in Germany, kindly inquire for him and communicate with C. Mills, 31, Campden House Road, W.8.?

FOREIGN COMMUNIQUES.

FRANCE.

Oct. 10th.—On Oct. 9th, notwithstanding the fog, which greatly hampered air operations, our observing aeroplanes successfully carried out a great number of reconnaissances, which were pushed very far forward into hostile territory. Important concentrations of enemy troops having been reported in the region of Etraye, Damvillers, and Courcy, our bombing squadrons operating in massed formation dropped, with most successful results, 32,600 kilogrammes (nearly 33 tons) of bombs and fired several thousands of cartridges on the troops and convoys of the enemy. During these operations 29 enemy aeroplanes were felled or brought down out of control.

During the night the very dense fog only permitted the dropping of 5,300 kilogrammes (over five tons) of projectiles on the stations of Longuyon, Dommary, Barancourt, and Audun-le-Roman.

Oct. 11th.—During the day on October 10th our bombing aviators working in conjunction with advanced elements of our infantry carried out important operations, dropping over 35,000 kilogrammes (35 tons) of projectiles on concentrations of troops and convoys in the region of Vouziers and on a munitions depôt, which exploded.

Numerous fights in the air took place, in the course of which 17 enemy aeroplanes were brought down or fell disabled. Eight balloons were set on fire.

Our observing machines incessantly flew over the rear of the enemy front, reporting particularly numerous fires which the enemy is kindling during his retreat.

During the night our bombing squadrons continued their activity of the daytime, dropping 24,000 kilogrammes (24 tons) of explosives on bivouacs in the region of Laon, the stations of Longuyon, Hirson, Attigny, Pauvres, Mont Cornet, and on the convoys and trains in the Mount Cornet-Rethel region. Numerous hits were observed, and fires and explosions were caused, especially in the stations of Hirson and Attigny.

During the month of September our aviators have felled or brought down out of control 211 enemy machines, of which only eight fell in our lines, most of the fights having taken place within the enemy lines. Sixty-two enemy balloons were set on fire.

Our bombing squadrons in the same period dropped 369,000 kilogrammes (369 tons) of projectiles, or 156,200 kilogrammes (156 tons) in the daytime and 213,000 (213 tons) during the night.

ITALY.

Oct. 8th.—Last night our airships, though hindered by strong winds, effectively bombarded aviation camps and vital enemy centres in the Trentino and Venetia Plain.

Oct. 9th.—Our own and Allied aerial activity was very intense. Our chasers attacked a hostile patrol, bringing down one machine. Trenches, hutments, railway establishments, and columns in movement were bombed and attacked with machine-gun fire at a low altitude.

Albania.—Our own and British aviators effectively bombarded and attacked with machine-gun fire troops and transport on the march along the Robozina-Durazzo road.

Oct. 10th.—Aeroplane flights effectively bombarded a large encampment to the east of Durazzo.

Oct. 13th.—Yesterday afternoon our air squadrons effectively bombarded the works of Muggia (Gulf of Trieste). Some enemy machines who tried to drive us off were promptly repulsed.

GERMANY.

Oct. 11th.—During the month of September, 773 enemy aeroplanes (124 by anti-aircraft guns) and 96 balloons were destroyed on the Western front. Four hundred and fifty of these aeroplanes are in our possession. The rest were seen to fall within the enemy's lines.

In spite of the frequently great superiority in numbers of the enemy, we only lost 107 aeroplanes in battle. This successful fighting in the air created the basis for the energetic participation of our aviators in the battle on the ground by reconnoitring by day and night. By bombing raids on objectives of military importance in the enemy's hinterland and by attacks on the battlefield with machine-guns and drop-mines (*Wurfminen*) they effectively supported everywhere the infantry and artillery. In spite of the enemy's obstinate attacks on our captive balloons, during which we lost 103, he was unable to hinder the activity of our observers, who went up regardless of danger.

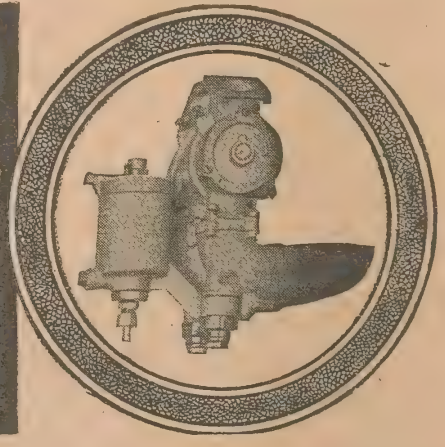
BELGIUM.

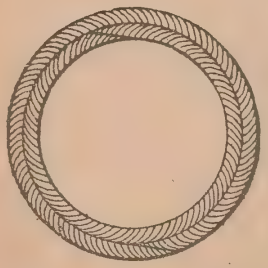
Oct. 8th.—German aeroplanes were very active, and machine-gunned our first lines and our roads towards Moorslede and Passchendaele.

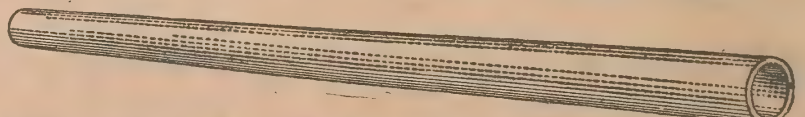
Oct. 14th.—At 5.30 this morning, Belgian troops, and French troops acting in close co-operation with them, advanced to the assault of the enemy positions on a front of over 20 kilometres (12½ miles) between Handzaeme Canal and the Roulers-Menin road.

Belgian and Allied aviators gave the most useful collaboration, helping our infantry and our artillery by bombarding and machine-gunning the retreating enemy convoys and columns. Two balloons and five enemy aeroplanes were brought down. Lt. Coppens achieved his 36th victory.

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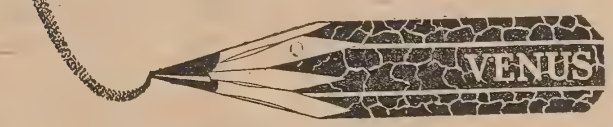
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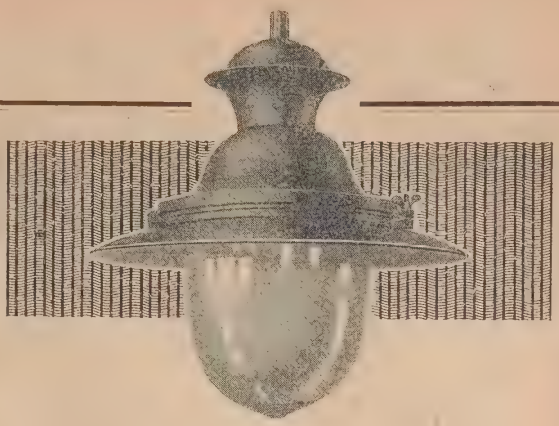
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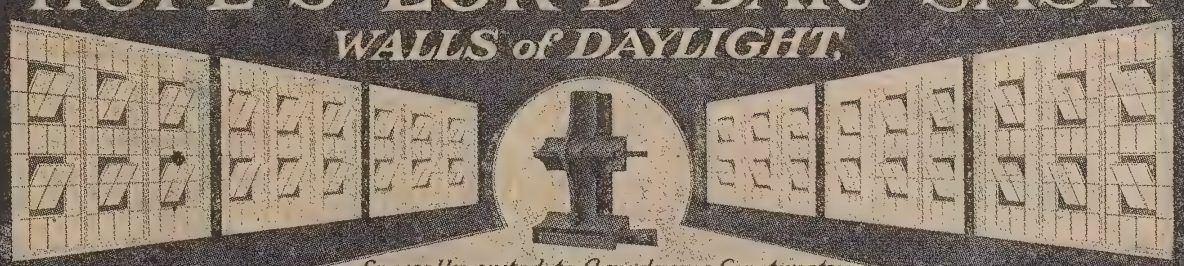
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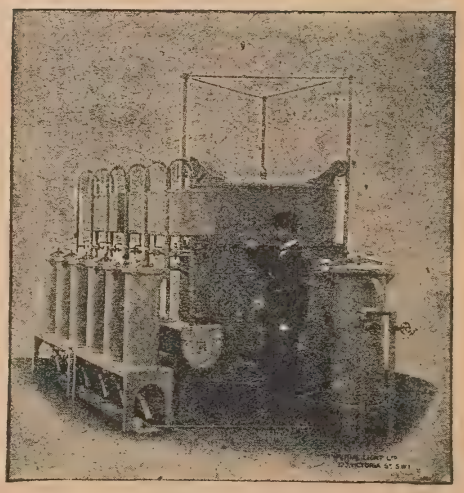
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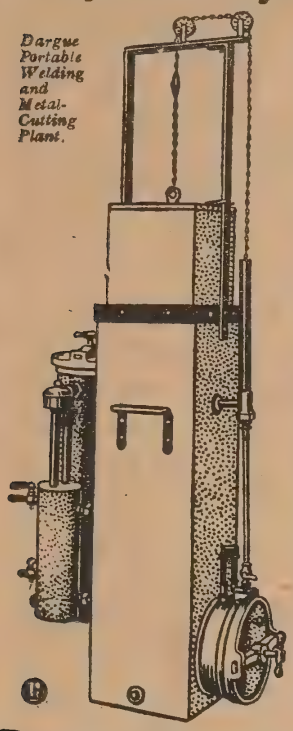
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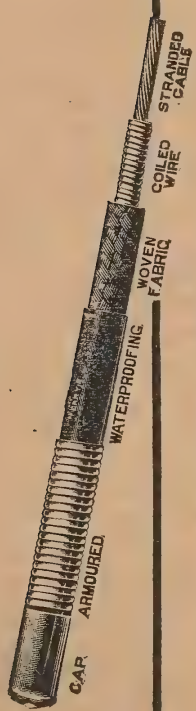
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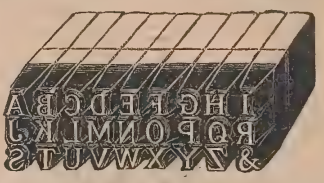
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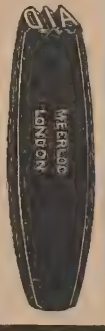
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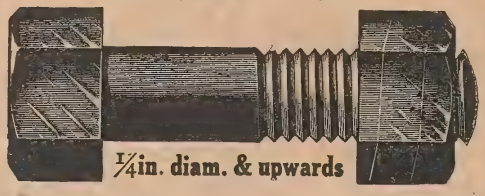
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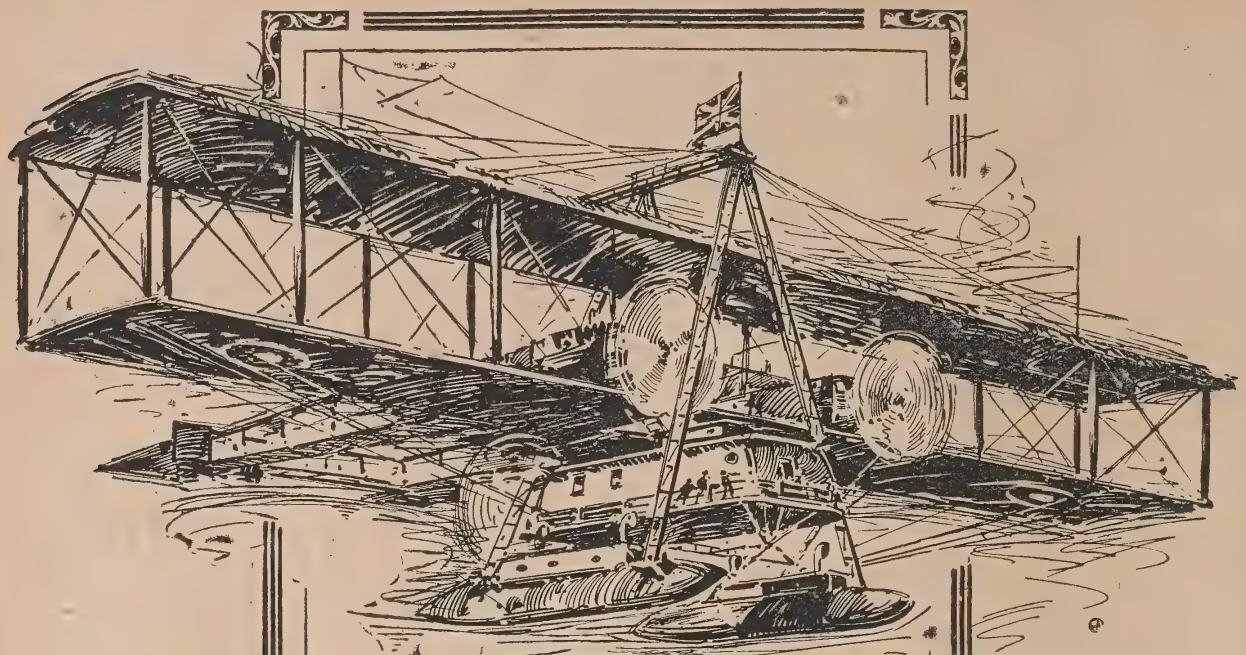
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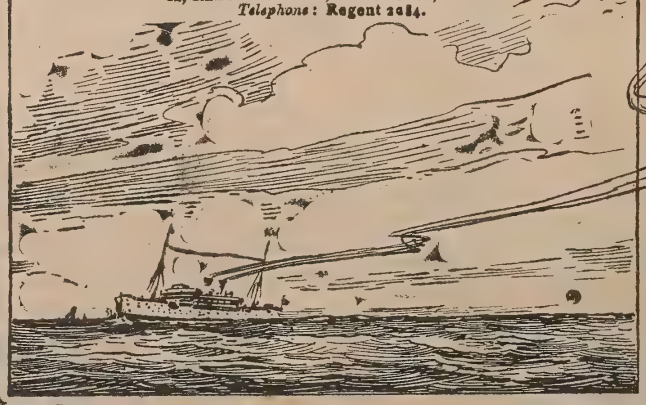
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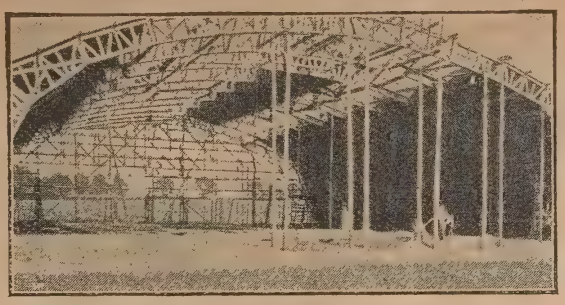
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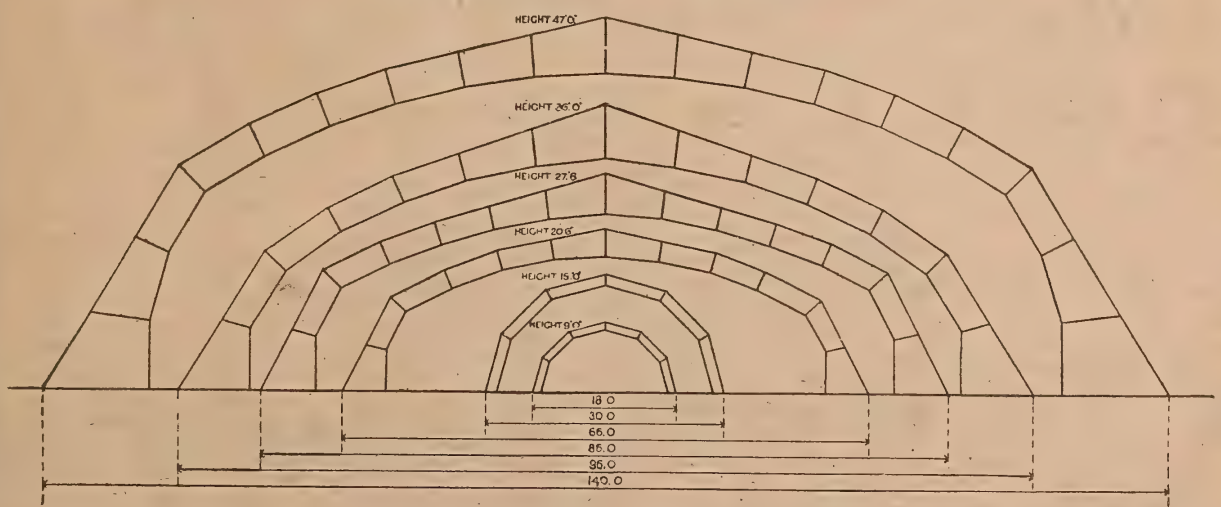
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ON THE "LEINSTER" TRAGEDY.

Compared with the happenings in the war areas, the sinking of the Irish mail steamer "Leinster," with a few hundred civilians on board, may seem, in English eyes, a very trivial affair and scarcely worth all the fuss that has been made about it. One is, in fact, mildly surprised that the "Times" should devote to the the questions which were asked in the House of Commons on the subject the major portion of one of its columns, which might otherwise have been devoted to eulogies of Mr. George and his Heaven-sent leadership. Perhaps, however, the fact that most of the aforementioned space is occupied by the excuses of Dr. MacNamara (himself an ex-Irishman) on behalf of Their Lordships of the Admiralty, and that the administration of Mr. George is thereby indirectly defended, accounts for the seeming generosity of Lord Northcliffe's chief journal.

The gist of the discussion was that Mr. Dillon asked for an enquiry into the sinking of the "Leinster," and particularly drew attention to the correspondence between the owners of the Irish mail boats and the Admiralty on the subject of providing adequate escorts. Mr. Houston, a well-known shipowner, asked whether any escort was provided.

Dr. MacNamara, in the best official way, expressed their Lordships' regret at this untoward occurrence, and assured Mr. Dillon that the Admiralty had given "all the protection possible within the means at our disposal" —a reply worthy of the Nonconformist Conscience at its best. Further, he made the astounding statement that the Admiralty have no "escort forces capable of escorting a vessel whose speed by Lloyd's is 23½ knots in the weather and the high sea that prevailed at the time." By way of inducing his audience to believe this statement, he said, further: "On the distress signal being given, one of the destroyers patrolling in close proximity, whilst proceeding with all dispatch to the scene, had her forebridge wrecked when attempting to steam between 19 and 20 knots."

The lack of direct veracity in this reply may be gauged by the fact that 23½ knots was the "Leinster's" best speed in a calm, so that in heavy weather it would be much reduced. Apart from which, as Mr. Houston pointed out, her speed since 1917 has been reduced from 23½ to 22½ knots.

Further, Dr. MacNamara's ideas of "close proximity" may be gauged by Mr. Dillon's statement that one hour and 25 minutes elapsed between the sinking of the "Leinster" and the appearance of the first rescue boat on the scene. When one remembers that the journey from Kingstown to Holyhead takes less than three hours, even in bad weather, one sees that even if the "Leinster" sank exactly in mid-channel, a destroyer of her own low speed could have reached her, *starting from harbour* at either side, in just about the same time as the destroyer which was alleged to be "patrolling in close proximity." So much for official ideas of accuracy and veracity of statement.

Believing the Unbelievable.

One fails utterly to understand how the officials who supplied Dr. MacNamara with his answers can imagine for one moment that an intelligent and quick-witted people like the Irish are in the least likely to believe such unconvincing and palpably "prepared" statements. One can only assume that, having for so many years palmed off such excuses on the slow and stupid English, they think that they can dope the Irish with similar facility.

The extreme need for an adequate escort at the particular period during which the "Leinster" was sunk was shown by Mr. Byrne's catalogue of the coal-boats sunk in the Irish Sea during the previous four days, a catalogue which in itself was a disgrace to a nation which arrogates to itself the title of "Mistress of the Seas."

Dr. MacNamara's final reply is the essence of official feebleness, and is quite worthy of this camouflaged Parish Council which pretends to be the Government of the British Empire. Said he: "I can only repeat that the Department responsible for protection, within the means at its disposal, does give infinite pains to the matter, and that is witnessed by the immunity which this sea has enjoyed compared with other parts of the seas around the United Kingdom." In other words, if there is an utterly inadequate police force, thanks to official feebleness, Tooting is fortunate in having less burglaries than Shoreditch, because it is farther away from the East End.

Who Is the Criminal?

The whole official attitude on the affair would be excruciatingly funny if it were not for the ghastly tragedy behind it. The English papers compare the "crime" of sinking the "Leinster" with the "crime" of sinking the "Lusitania." So far as the sea-Hun is concerned, one considers him far less a criminal than that "Department responsible for Protection" for which Dr. MacNamara makes such futile excuses. The Hun, at any rate, gave fair warning that he was going to sink at sight. In the case of the "Lusitania" he even went to the trouble of advertising in the American papers, and of circularising the passengers, that he was going to sink her. And he kept his word.

Yet, in spite of those warnings, Dr. MacNamara's precious Department failed to provide an escort for either ship. War is war, and war is hell, but war is also one of the oldest businesses in the world, and even a member of Mr. George's Government—which sets up to be a business Government—ought to know that one cannot play at war any more than one can play at business.

Dr. MacNamara, having bleated about the impossibility of escorting a 23-knot boat with destroyers—which is a damnable distortion of facts—was asked by that sound old business hand Mr. Houston whether he did not "realise that the best security for this class of boat is aircraft?" Again came the futile official reply: "That matter has not been lost sight of." Naturally, being an ex-schoolmaster, Dr. MacNamara would use the vilest of grammar; but that by the way. Here is the simple solution of the whole problem, as many people know, though the "Department responsible for Protection" still continues on its ignorant official way.

Aircraft Escort.

One does not expect slow land-machines with life-belted pilots to escort mail-boats over 60 miles of sea in a gale of wind. Nor does one expect soggy old sea-planes to stagger off the water of Dublin Bay or of Holyhead Harbour, and trust in God that their engines will not let them down halfway across. Nor does one expect the merry Blimp to stand still or fly backwards over the Irish Sea in its efforts to make headway against a 40-knot gale.

But one does expect someone in the "Department responsible for Protection" to have the common *nous* to understand that a kite-balloon is as near as no matter an absolute guarantee of safety for any ship fitted with one. And even an Admiralty Department might find out from the Royal Air Force that a modern kite-balloon will stand up to any wind which it is possible to cause by towing it with any existing ship.

The K.B. Guarantee.

None know so well as the Hun submarine skippers how great a protection is a kite-balloon, so one is giving away no secrets when one says that in no case has a ship towing a kite-balloon been sunk by a submarine, and that, so far as one can gather, in no case has a K.B. ship even been attacked—at any rate, if such a ship has been attacked it has been at such long range that the torpedo has never been seen.

The reason is perfectly simple. The K.B. is seen by the submarine long before the ship to which it is attached, so that it acts as a sufficient warning, as a rule, to assure safety. And by the time the submarine can sight the ship it is itself spotted by the K.B. observer, who can signal to his own gunners and to patrol ships "in close proximity"—if they are really there—the precise position of the submarine.

The art of using K.Bs. is perfectly understood by a number of very able officers, both in the Navy and in the Air Force, and yet Dr. MacNamara's "Department responsible for Protection" does not seem to realise that part of its responsibilities is a knowledge of the uses of kite-balloons.

There is no reason whatever, if it be true that the Great British Navy cannot provide an escort for a 23-knot boat—which does about 20 knots in a sea-way—why each of the Irish mail-boats should not tow its own K.B. and thus provide a thoroughly effective escort for itself. Therefore one commends to anyone interested in any enquiry which may be held concerning the sinking of the "Leinster" the very pertinent question as to whether she and her sister ships have ever been equipped with kite-balloons.

Ireland's Just Grievance.

It is common knowledge that the French cross-Channel boats, which are by no means slow, are properly escorted; therefore one can believe Mr. Dillon's statement that "feeling in Dublin and throughout Ireland is intense on this matter" of the un-escorted Irish boats.

For 700 years Ireland has been grossly misgoverned by England, and yet the English expect the Irish to be loyal supporters of the British Empire. If the English people knew anything whatever of the history of Ireland they would thank their God for what Irishmen have done to help England in this war, instead of for ever prating about Irish disloyalty.

If one could get at the true figures it would probably be found that a bigger proportion of the total population of Ireland has joined the King's Services voluntarily than the proportion of Englishmen who joined as volunteers without being conscripted. And it might also be found that the proportion of able-bodied men in Ireland to-day is less than the proportion of able-bodied men now in "protected" industries in England, even now that the conscripts have gone. And yet the English cry out because the Irish refuse to enlist.

Therefore, can one be surprised at this "intense feeling" in Ireland when the British Government allows Irish passenger boats to cross seas infested with enemy submarines, and not only fails to provide an escort of any kind, but even fails to provide patrols which are within an hour and 25 minutes' journey of a ship in the course of a three-hour passage? Can one blame the Irish for regarding the whole affair as either another piece of typical English stupidity or as another instance of deliberate neglect of the welfare of Irish men and women?

One knows that Dr. MacNamara's "Department responsible for Protection" has been doing its best, and that it is scrupulously honest, and all that. But so have been all the futile generals who have been sent home from the Front after wasting the lives of their men, and so have been some of the officials who have been sacked from Government Departments at home after getting them into a mess. Those who know much about aircraft know better than most people how utterly futile and fatuous and bigoted and prejudiced has been the official attitude towards aircraft escorts in general and kite-balloon escorts in particular, and the people who have failed to provide such protection as aircraft are well able to afford deserve to go the way of all other official failures. The tragedy of it all is that a "Leinster" affair, or something equally bad, is always necessary to cause their removal.—C. G. G.

ON PARROTS AND THINGS.

Some few days ago a distinguished officer of the Royal Air Force told a story, apropos something entirely different, which somehow seems to illustrate very charmingly the chronic mental state of this country and of most of its cherished institutions, such as its Government Departments, its learned societies and so forth. This touching little story runs thusly:—

In the by-gone happy days, when English gentlemen lived as such, and did themselves well, a certain sportsman went to dine with a friend who lived near. Next morning he was awakened at a reasonable hour, about midday, by his man bringing him a note. He recollected that he had dined well and that he had spent a pleasant evening, but beyond that his memory failed him. Then he opened the note, which proved to be from his host of the previous evening, and read:—"Dear John, will you be so good as to return my parrot and cage by the bearer of this note? He is bringing your lanthorn with

him?" Somehow the mental picture which one conjures up of that excellent gentleman, well dined and well wined, meandering home along a dark country road and lighted on his way by a blinking parrot, is one of the most gorgeous in all anecdotage. The teller of the story says that it is old, and attributes it to "Punch," but in a memory of something like forty years of stories which may be told in drawing-rooms, in smoking-rooms, and elsewhere, one cannot recall ever having heard it before.

Yet it is singularly applicable to John Bull to-day, whether one finds him in the King's uniform or out of it. Always one sees him leaving the true light behind him, always one finds him following the parrot cry of the politician or some other hot-air merchant, and always one finds him warmly and comfortably asleep in his own bed at the finish, without the remotest knowledge of how he got there.

Our Parrot-Cries.

If we are not very careful, we shall wake up in a year or so and find that we have won this war, though, Heaven knows, the British nation, led by the catch-phrases of its politicians, has done its best to lose it. We have lived on parrot-cries all the way from "Business as Usual" in the early days of the war right up to the "League of Nations" humbug of the present day.

Even our methods of getting money for the war are just as parroty as everything else. Instead of merely lumping heavy but equitable taxes on everybody alike, and getting a few hundreds of millions extra by instituting huge Imperial Lotteries and making betting-slips bear a cheque stamp, we turn Trafalgar Square into a fifth-rate White City or Earl's Court show and start a parrot-cry of "Feed the Guns." And yet we get the money and keep the war going.

Truly we are a wonderful people. Probably not one person in a thousand in Great Britain has ever seriously thought it possible that we might be beaten in the war, and not one in a hundred has ever thought it possible that we might fail to win it—which is quite a different matter. Personally, so great is one's faith in "our land's long-suffering star," that one has always believed that we should win eventually, but one never thought that we should be so near winning in so short a time as we appear to be at present. One believed that the nation would wake up after some serious defeats in the field, would scrap its politicians, and would entrust the Army Chiefs with the task of governing the country till we had won. But now it looks very much as if the parrot and its cage will still see us home. The interesting thing will be, in the future, to see whether any of our gallant Allies, with whom we dined so well before the war, will be kind enough to point out the difference between the parrot and the true light. Where the parable breaks down, apparently, is in the fact that none of them will want to adopt our parrots after the war.

What *Is* a Technical Officer?

However, that is not really what one set out to discuss. It is merely an illustration on the biggest scale of what occurs all the way down the scale. Take as an example of the other end of the scale the question of technical officers in the Royal Air Force. Can anybody from the top to the bottom of the Air Ministry define a technical officer?

Obviously a technical officer is an officer who performs technical duties. But is he? That definition is about as enlightening as Doctor Johnson's classic definitions:—"Archdeacon: One who performs archidiaconal functions." "Archidiaconal: Pertaining to an archdeacon." The real question is, "What is a technical duty?" Can anyone at the Air Ministry answer that?

One sees in the "Gazette" this officer appointed to "Administrative Branch," that to "Technical Branch," the other to "Staff," and yet another to "Flying Branch" or "A. and S."—which, one gathers, means that he is at disposal to fly aeroplanes or seaplanes, though whether he has ever flown anything more nautical than a land-machine with a life-belt is not apparent. Yet any one of them may have either vast technical qualifications or none at all.

Cases in Point.

That is to say a thoroughly estimable accountant, a highly technical figure-chaser in finance, may, on being called up for military service, have wangled a commission in the R.A.F. He may, by a combination of luck and judgment, have specialised during his course of training in learning all about one particular engine, and, because that engine happens to become largely used, he may have been selected to go round and teach repair-shop officers the tricks of that engine. On the strength of that, and knowing nothing else, he may become a full-fledged Technical Officer and draw technical pay.

On the other hand, a fully qualified engineer, with some twenty-five or thirty years of *pukka* engineering work behind him, may have joined the R.A.F. out of pure patriotism, when he might have started a munition-factory on the capital of the local diamond-merchant, who would thus become a Director of an Armament Works, and so escape being called up. Our engineer friend, having so wide a knowledge of engineering, may scorn to devote all his brain-power to one silly little engine, about which he could learn everything in two or three days, and may determine to cover the whole field of aeroplanes and engines and their parts.

As a result he may find himself, at the end of his course, with so much all-round knowledge that he is appointed a Stores Officer, to look after the whole equipment of a Squadron. In which case he suddenly finds that he is not a Technical Officer at all, but merely an administrative second lieutenant, a clerk in charge of stores, and that his pay is eleven shillings *per diem*, or thereabouts.

The Quick-Change Specialist.

Or, a popular actor, who is too too charming to have his beauty spoiled by the nasty Hun, may also wangle a commission without going through any training course with the common herd. He may specialise on some slightly uncommon subject, such as, say, bombs, or machine-guns, or release-gears, and get all the information he can from war-worn pilots and observers and from trained engineers who are not Technical Officers, and from other people who were in that line of business before the war. And, on the strength of information so gathered, he may start up a new sub-department to deal with his pet subject, and become a Technical Officer of enormous rank.

On the other hand, an ex-Marconi operator may have joined the R.N.A.S. as a prob.-flight-sub-lieut. early in the war. He may have failed to become a pilot, and may have become a star-turn observer as a one-striper R.N.V.R. He may have been crashed by a ham-fisted pilot, and have been medical-boarded as unfit for flying either as pilot or observer. He may have been sent to a training establishment at home to instruct cadets or junior officers by the hundred in the latest uses of wireless. And he may then find himself an Administrative Lieutenant on eleven shillings *per diem*, or the like, whereas on his length of service, the value of his services to the King while serving abroad, and the value of the

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work which he is doing at present, he ought by all the laws of common decency to be at least a Technical Major.

Yet again a young and able-bodied man may have spent the first two years of the war as a general assistant in a third-rate aircraft factory. He may have been baited by his female friends into getting into uniform as an R.N.V.R. lieutenant attached R.N.A.S. He may have spent the next two years filling up forms and signing chits in a department of the Admiralty and then at the Bolo House, and now he may find himself, on the



strength of having dealt with R.N.A.S. stores at Headquarters, a Technical Captain or even higher, though he may in fact have no technical qualifications whatever.

Camouflaged Engineers.

One does not suggest for a moment that every Technical Officer ought to have what are commonly called "technical qualifications": *id est*, a string of the initials of learned societies after his name. Heaven forbid! For, as one has remarked on another occasion, the practical value of a man as an engineer is usually in the inverse ratio, or more likely the square of the inverse ratio, of the number of letters which he puts after his name.

All these strings of letters are parrot-cages of the worst kind. The true engineering light is with the plain-damn-your-eyes engineer who can handle men, who knows the value of materials, and who gets a job done. He has spent his life learning things and doing things, and has had no time to waste on answering catch-questions at examinations and currying favour with the people whom he would need to propose and second him as a member of this, or an associate of that, or a fellow of the other Society of Technical Camouflage.

What one does suggest is that a Technical Officer should be a man who has had practical experience of the particular job which he is doing, either on active service during the war, or in workshops before the war. But some attempt should be made to distinguish between the real technical man and the man who is merely a one-eyed specialist or *competition-wallah*.

It is absurd to give a man technical pay because his mind or his experience is too narrow for him to know anything outside his own job, when at the same time a man with wide and long experience is merely an Administrative Officer drawing ordinary regimental pay. It is time that real technical knowledge was recognised. There is still too much of the old Admiralty spirit, so delightfully expressed by the late W. S. Gilbert, in "H.M.S. Pinafore," in the lines:

"Stick close to your desks and never go to sea,
And you'll all become Rulers of the Queen's Navee."

The Right Thing.

That was the essence of mid-Victorian Service ways, but it ought not to be permitted to exist in the reign of George V, by the Grace of God, and somewhere towards the end of a really decent-sized tribal fight—even if it falls short of being a full-grown race-war, as the next war will probably be. Technical Officers are only a small part of the Royal Air Force, it is true—though anyone who has much to do with the Bolo House might think that Technical Field-officers were in about the same proportion as Generals in the Nicaraguan Army—but, if they are fit for their jobs, they ought to be a mighty important part. Therefore, if we are going to finish this war in style, during the next year or two, and if we are going to make the Air Force what it ought to be during the twenty or fifty years or so between this and the next war, then it is time that somebody at the Air Ministry decided what a Technical Officer should be, and saw that he was it.—C. G. G.

AERONAUTICAL PROGRESS IN FLANDERS.

An unofficial Press Bureau communiqué states that much of the success achieved by the Allied armies in Flanders during the past week lies in the singular conformation of railway systems which lie behind the original German front line, from Lille to the sea. As this line stood on Sunday, Oct. 13th, prior to the combined British and Belgian offensive, an exceedingly serviceable network of railways supporting the enemy armies in this sector, of which the leading junctions were Lille, Tournai, and Courtrai.

For some time past these railways have been in a highly congested state, and British aviators, taking advantage of this fact, maintained an almost continuous offensive against the more vital junctions, dropping over 40 tons of bombs with good effect.

Thus, when in rapid succession Roulers, Menin, Courtrai, and, finally, Lille and Ostend were captured, the enemy was thrown back upon communications already congested and disorganised, which were being fractured in new places from hour to hour.

Besides the bombing of German centres of communication, the R.A.F. contingents carried out the usual co-operation with the advancing infantry. During Monday's, Oct. 14th, fighting 30 enemy machines were destroyed and a further six were driven down out of control, and the British artillery patrol machines directed the fire of the artillery on numerous targets.

It is apparent that the enemy are unable to replace their losses of aircraft during the last three months. The tendency of the enemy has been to act in larger formations, and to concentrate his strength upon particular sectors rather than dispute the British aerial supremacy. A recently captured German order issued by Gen. von Bülow is very significant, as will be seen from the quotation produced below:—

"The best means of defence against enemy aviators are our scouts, which are being reinforced. Their numbers, however, will never equal the enemy's strength in fighting machines. . . .As a result, troops in quiet sectors will often have the impression that they are not being protected. They must rely on defence from the ground against their most dangerous air opponent, the low-flying machine."

THE I.A.F.

Although mists were prevalent throughout the greater part of the week, the R.A.F. Independent Force dropped nearly 20 tons of bombs in the course of 15 raids over German territory. The railways at Metz-Sablon were attacked seven times, Mezieres station three times, Thionville station three times, while the blast furnaces at Rombach and the aerodromes at Frescaty and Morhange also sustained attacks. Despite the formidable enemy defences now established at these vital places the R.A.F. Independent Force did not lose a single machine during the week.

THE R.N.A.F. ON THE BELGIAN COAST.

The following particulars from various sources concerning the German evacuation of the Belgian coast are of more or less interest, as they show the part played by the R.N.A.F.

The "Times" correspondent says, writing from a "Kentish Coast town":—

From an officer and a seaman on a British monitor which came into port to-day I have heard accounts of Ostend and its people, after the departure of the Germans. In the neighbourhood of the harbour and the docks there is abundant evidence of the havoc caused by bombs dropped by Allied aviators, but our aeroplanes last week were engaged on a mission of a more peaceful kind. When the Germans marched out of the town, they took with them all the food they could collect, and the citizens were left almost entirely without provisions. Their wants have been supplied from the air. Throughout Friday aeroplanes were acting as convoys and machine after machine laden with food landed on the beach, and, having discharged its cargo, went back for more.

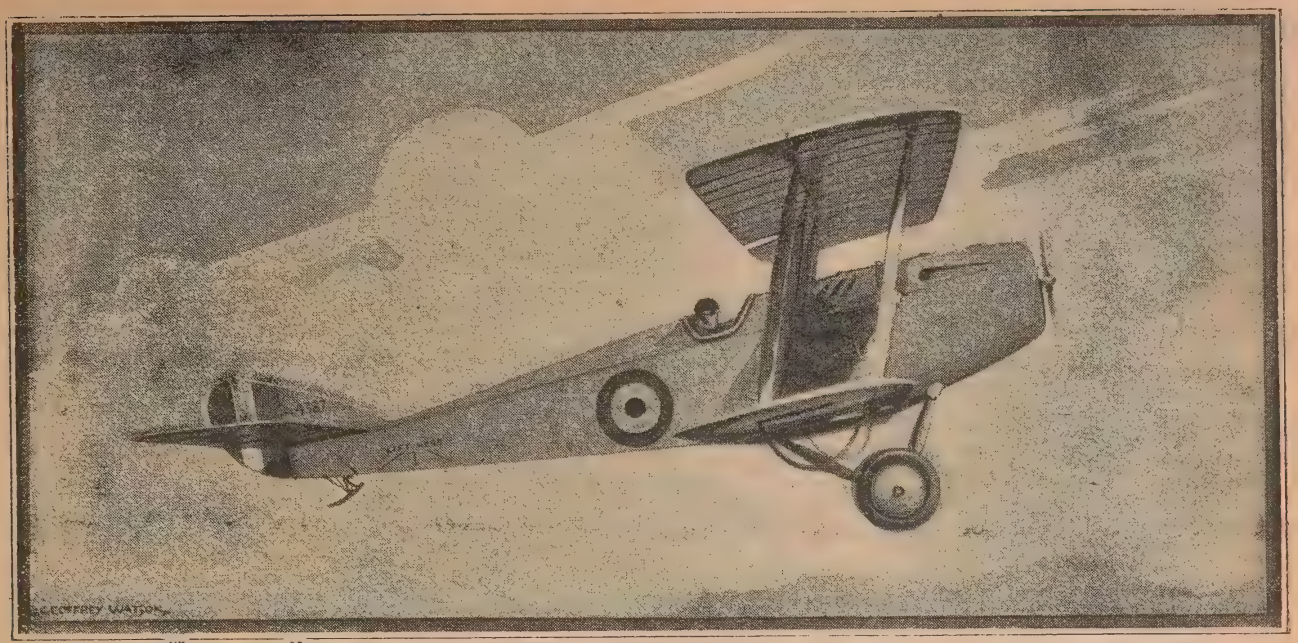
Mr. Phillip Gibbs, the correspondent of the "Daily Telegraph" and the "Daily Chronicle," writes on Oct. 20th:—

Our Naval Air Service, as it was then, before amalgamation in our Royal Air Force, did a great deal to smash these ambitions by ceaseless bombing. (Referring to the submarine campaign.) As I have written more than once in months past, the pilots and crews of our big Handley Page machines never left Ostend alone, and poured bombs over the submarine workshops night after night, doing enormous damage, so that, as I could see by aerial photographs, many basins were abandoned, many great sheds destroyed, and submarines refitting or repairing had to creep further back into other basins, which in turn were attacked. By day ordinary aircraft took up the work of the night raiders, and dropped smaller bombs and kept the German engineers in a state of terror.

Mr. Gibbs also states that for all this there was much valuable machinery left, and Mr. Percival Phillips in the "Daily Express" seems to agree. He says:—

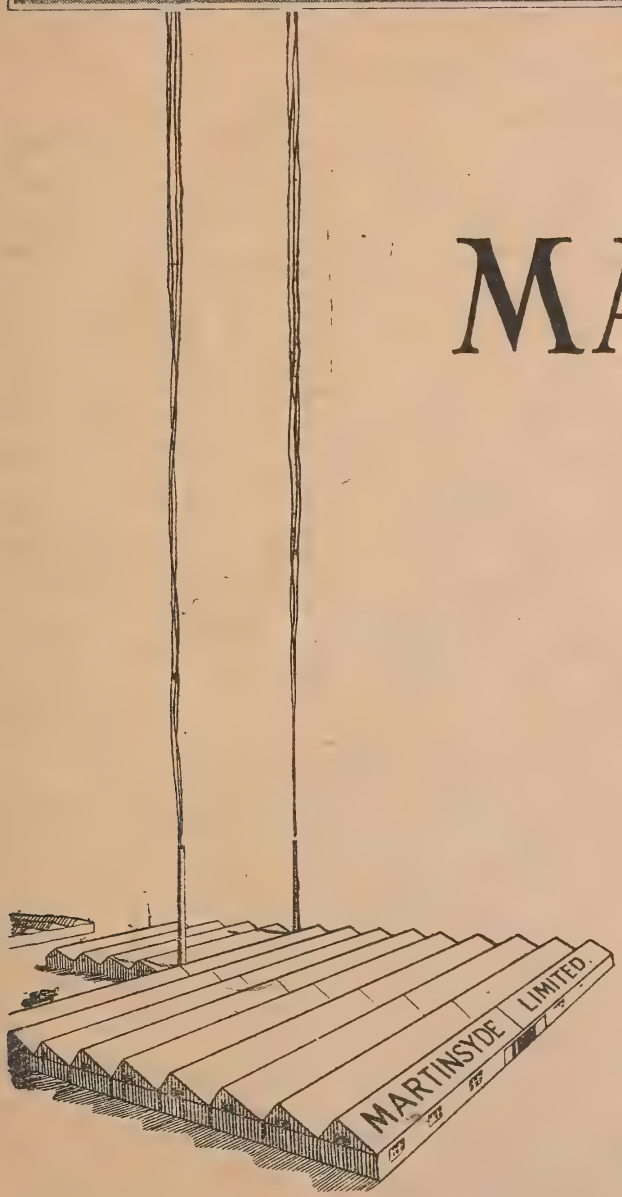
Ostend is defaced, but not destroyed. The main part of the town remains, overlooking the ashes of Middelkerke and Westende, which were too near the Nieuport front. British aviators did their bombing well, hitting military targets with wonderful accuracy, sparing the civilians and their property in a manner which evoked the gratitude of the inhbitants.

It seems strange that after such a regular system of air raiding and bombardment the towns mentioned should be in such a good state of repair, but it speaks well for the marksmanship of the R.N.A.F.





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THE TURKISH ROUT.

Reports which have now come to hand by mail concerning Gen. Allenby's great advance in Palestine contain highly interesting accounts of the tactics employed by the Royal Air Force and the Australian Flying Corps in the course of the operations which led to the taking of Nazareth on Sept. 20th.

The chief object of the British aviators was to prevent the enemy from gaining knowledge of important cavalry movements, and to that end big bombing machines remained throughout the night of Sept. 18th-19th over the principal Turkish aerodrome at Jenin, which was subjected to a constant rain of heavy bombs. Later, it was found that tremendous damage had been done by the direct hits secured.

But the methods which were brought to bear at daybreak were nothing short of sensational. Fast machines in pairs, each carrying a number of 20 lb. bombs, sat over Jenin all day. Each pair of machines was relieved at pre-arranged intervals.

Any movement on the aerodrome brought a bomb crashing about the ears of those responsible for it, and in actual fact the enemy never got a machine off the ground. As each machine was relieved, its pilot dived down and sprayed the hangars with machine-gun bullets before making off for another load of bombs.

The inability of the Turks to get a single machine into the air permitted our cavalry to execute its critical turning movement without being observed, with the result that Nazareth was entered at three o'clock the following morning.

Very remarkable results were obtained by the British flying men in their operations against the retreating enemy transport. The moment the retreat began, groups of machines, leaving the ground at three-minute intervals, flew over and bombed the head of each column. The Turks were thrown into utter confusion, and in every case the personnel of the attacked column fled wildly to escape annihilation. In many instances two or three frightened soldiers scrambled frantically upon the back of a single horse and galloped away.

An eye-witness of the terrible carnage thus caused said: "It was appalling. Men, horses, guns, and oxen lay in tangled heaps. The crews of motor-lorries abandoned their vehicles without stopping the engines. The lorries ran amok and finally overturned, thus increasing the confusion twofold."

These operations amounted to an outflanking of the enemy from the air, and his plan for retirement was completely upset. The effect on the moral of the Turks was overpowering. One captured divisional general admitted that he had lost all control of his division, against which he had seen 70 of our machines employed. His statement was substantiated by the testimony of other officers captured as to the havoc wrought by the aeroplane attacks.

In one case a column was broken up eight miles behind the enemy front line. Eighty-seven guns, 33 motor-lorries, and more than 900 other vehicles were abandoned. Never, probably, has there been a more tremendous demonstration than in these operations of the weight and power as a military auxiliary of the Royal Air Force.

IN SOFIA.

The following account from Mr. G. Ward Price of his visit to Sofia on Oct. 11th appeared in various newspapers on Oct. 21st:—

I arrived here this morning by the first British aeroplane to land here since the capitulation, the start having been delayed by bad weather. A throng of brown-clad Bulgar mechanics with a dozen of their flying officers watched the landing of the three British aeroplanes with curiosity, while two or three Germans, who must be the last of those who used to strut about this ground, the lords of all they surveyed, walked disdainfully away.

In a Bulgarian Army motor-car bearing the Royal arms blazoned a foot square I drove into the capital with a colonel of the R.A.F.

THE ENEMY AIRCRAFT EXHIBITION.

It is announced that early next month the Exhibition of Enemy Aircraft at the Agricultural Hall, Islington, will be thrown open to the public.

The machines shown have been re-erected, so as to show not only their external features, but the details of their construction.

Amongst other machines on view may be mentioned the Gotha, Friedrichshafen, and A.E.G. bombing machines, the Halberstadt, L.V.G., D.F.W., Rumpler and Hannoveraner two-seater, the A.E.G. armoured trench fighter two-seater and the Fokker (biplane and triplane), Pfalz and Albatros scouts.

There are also a number of engines and accessories, including wireless gear, machine-guns, bomb-sights, electrically-heated clothing, and innumerable aviation instruments.

A charge will be made for admission, and this will be devoted to the R.A.F. Hospitals Fund.

[Which is in accord with the recommendations of this paper over a year ago.—Ed.]

ROYAL AERONAUTICAL SOCIETY.

54th Session.

PROGRAMME OF LECTURES, 1918-19.

Except where otherwise stated the lectures will be given at the Royal Society of Arts, 4, John Street, Adelphi, London, W.C., at 7.45 p.m.

1918.

Friday, Nov. 8th.—"Fighting in the Air," by Capt. Cochrane Patrick, R.A.F. The lecture will be given in the Central Hall, Westminster. The chair will be taken at 7.45 by Maj.-Gen W. S. Brancker, R.A.

Wednesday, Nov. 20th.—"Stress Optical Experiments," by Maj. A. R. Low, R.A.F., M.A. Chair to be taken at 7.45.

Thursday, Dec. 5th.—"Shop Practice in Respect to Aircraft Steels," by Brig.-Gen. R. K. Bagnall Wild, C.M.G., R.E. Chair to be taken at 7.45 by Sir Robert Hadfield, F.R.S.

Wednesday, Dec. 11th.—"Civil Aerial Transport: Is it Practicable, is it Safe, and is it Profitable?" by Claude Grahame-White. The lecture will be given in the Central Hall, Westminster. The chair will be taken at 3 p.m. by the Right Hon. Lord Northcliffe. Popular Lecture.

Wednesday, Dec. 18th.—"Full Scale Aeroplane Experiments," by Capt. W. S. Farren, C.B.E. Chair to be taken at 7.45 by Lt.-Col. M. O'Gorman, C.B.

1919.

Wednesday, Jan. 8th.—"To Constantinople and Back by Aeroplane in War-time," by F. Handley Page, C.B.E. Chair to be taken at 3, by Maj. Alan H. Burgoyne, M.P. The lecture will be given in the Central Hall, Westminster. Juvenile lecture.

Wednesday, Jan. 15th.—"Medical Aspects of Aviation," by L. E. Stamm, B.A., B.Sc., M.D., R.A.F. The chair to be taken at 7.45 p.m. by Surg.-Gen. Sir Alfred Keogh, G.C.B., M.D.

Wednesday, Jan. 29th.—"The Rigging of Aeroplanes," by Capt. R. J. Goodman Crouch, R.A.F. Chair to be taken at 7.45 by Lt.-Col. A. Ogilvie, R.A.F.

Wednesday, Feb. 12th.—"Fabrics and Dope," by Capt. F. W. Aston, of the Royal Aircraft Establishment. Chair to be taken at 7.45.

Wednesday, Feb. 26th.—"Some Points on Aeroplane Design," by Capt. F. S. Barnwell, R.A.F. Chair to be taken at 7.45 by Brig.-Gen. J. Weir, R.A.F.

Wednesday, March 12th.—"From Model to Full Scale in Aeronautics," by H. Levy, of the National Physical Laboratory. Chair to be taken at 7.45 by Dr. T. E. Stanton, F.R.S.

Wednesday, March 26th.—"Lighter-than-Air Craft," by Lt.-Col. T. R. Cave Brown Cave. Chair to be taken at 7.45 by Brig.-Gen. E. Maitland, D.S.O.

Wednesday, April 9th.—(To be announced.)

Wednesday, April 26th.—"Aluminium Alloys for Aeroplane Engines," by Professor F. C. Lea, F.R.S. Chair to be taken at 7.45 by Lt.-Col. Jenkyn.

Discussions will take place after each lecture.

The "Wilbur Wright" Lecture will be given in May. Details will be announced later.

The Annual General Meeting will be held in the offices of the Society at 5 p.m. on March 19th.

Visitors may attend the Ordinary Meetings on the introduction of a member of the Society.

Applications for tickets should be made to the Secretary at the offices of the Society.

W. Barnard Faraday, Secretary.

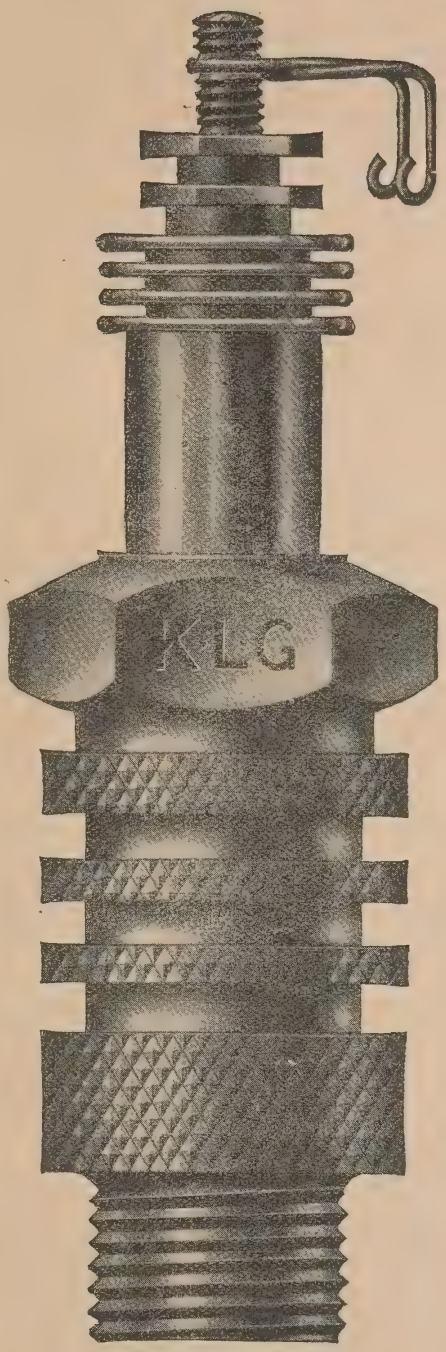
At the Offices of the Society, 7, Albemarle Street, London, W.1.

ITALIAN FLYING SCHOOLS.

Considerable prominence has been allowed to be given to the news of the blessing of a flag at the new (?) school on Lake Trasimene by the Archbishop of Perugia in the presence of members of the Government and the Hon. E. Chiesa, the High Commissary. The blessing of the hangars at Castiglione formed part of the proceedings, and energetic speeches were made by both the Civil and Religious personages present. It is many years now since the Trasimene Lake became a resting-place for waterplanes, but the public never knew, or has had to be kind enough to forget, the fact.

At another very ancient school, where training is done on monoplanes of Italian name and design, it is said that as many as 500 pupil-pilots are in residence, engaged naturally, on different sections of the theoretical and practical course of training provided.—T. S. H.

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UNIFIED AIR COMMAND.

The following Reuter's telegram was published on Oct. 17th:

The Washington correspondent of the Associated Press says that an agreement has been reached after a series of conferences between Mr. Ryan, head of the United States Army Aircraft Division, and the British and French Air Ministers and Directors of Munitions regarding greater co-ordination in the handling of the Allied aircraft resources.

In the future each country will be able to produce its maximum capacity along the lines in which it is best equipped, and the fighting forces of all three Air Services will be supplied from this production. The air supremacy of the Allies is not questioned, but this plan is expected to render impossible the concentration by Germany of its centralised air fleet against any particular part of the Allied line.

[One need not go far to seek the G.O.C.-in-C. Allied Air Forces.—Ed.]

ROYAL HUMANE SOCIETY'S AWARD.

The Royal Humane Society has issued the following award:—

Bronze Medal to Capt. James K. Fryer-Smith, R.A.F., for his gallantry on May 18th in saving Capt. A. A. M. Duff, R.N., the seaplane in which he was having come down on fire in the Firth of Forth. Capt. Fryer-Smith swam to his help and kept him afloat until a boat reached them.

AERIAL PROPAGANDA.

According to the frontier correspondent of the Amsterdam "Telegraaf," the German commander at Ghent, Major von Blücher, has issued a proclamation to the inhabitants, threatening them with a fine of £150 or one year's imprisonment, or both, if they fail to hand over immediately any literature dropped by aviators in Belgium. The correspondent adds:—

I have seen a copy of a newspaper printed in London and entitled "Le Courrier de l'Air." With a small piece of lead attached, it was thrown out of some flying machine, as the inscription "By Balloon" indicated. The newspaper contained war news, a review of the French offensives, and of the situation in Germany.

The Belgian population is, of course, eager to take up, read, and spread such literature dropped from the air. But the Germans want to keep all uncensored news out of the occupied territory. Hence the proclamation of the German commander.

Leaflets destined for German soldiers are also thrown out from aeroplanes. One I saw, for instance, consisted of letters from German prisoners of war, telling of their good treatment in British and French prisoner of war camps.

[One assumes that as the Germans threatened to shoot any aviator caught dropping leaflets our propagandist people are literally sending such matter by balloon. It seems a simple and obvious method of doing the job, and an automatic release for the leaflets would be quite easy to arrange.—Ed.]

THE RHODESIAN BADGE.

The British South Africa Company recently represented to the Air Ministry that it would give great satisfaction to the men ordinarily resident in Rhodesia, of whom a considerable number are serving in the Royal Air Force, if they were allowed to wear on their uniform a distinctive badge consisting of the word "Rhodesia."

The B.S.A. company have now been informed by the Air Ministry that approval is given for the badge to be worn with R.A.F. uniform by all ranks now serving in the Force who were ordinarily resident in Rhodesia before joining it, and that the necessary orders will be promulgated in due course. Arrangements are being made at the office of the Air Ministry for the issue of the badges. The design will be similar to that worn by men from other Colonies.

[Why not a similar concession to the erstwhile British Colonists in Bayswater or Brighton?—Ed.]

A PARACHUTE INCIDENT.

The "Times" correspondent, writing on Oct. 14th of the recent happenings on the Western Front, says:—

One curious sight I saw was a bold raid made by two German aviators on one of our observation balloons, diving on it out of the clouds and pouring machine-gun fire into it. Our aviators flying near saw and dived for them, and chased them back over the lines, but meanwhile the balloon was crippled. It did not burst into flames, but slowly began to deflate, and both occupants of the basket were obliged to jump with their parachutes. As they drifted down, the rope from the higher parachute, from which a man dangled, became caught in the other parachute, and, thus entangled, the two floated down together. It looked impossible, swaying and tipping as they were, each hampered by the other, that they could reached the ground safely, but after long suspense, while thousands watched, they came safely to earth well behind our lines.

[Which only shows what parachutes can do, even under the worst circumstances.—Ed.]

AMERICAN AIR ACTIVITIES.

The "Times" correspondent with the American Army writes on Oct. 20th:—

There has been extensive air activity all along the American front west of the Meuse during the last few days. Seventeen enemy machines were shot down on Friday. In bombing expeditions, too, the Americans have shown great enterprise. Sixty day-bombing planes, protected by 80 pursuit planes, the largest American concentration in the air yet seen, on Friday dropped 4½ (?) tons of bombs on German back areas.

The German aviators on this front are resorting more and more to the use of parachutes with which to escape. These seem to be a decided success.

THE R.A.F. HOSPITAL FUND.

As a mark of appreciation of the work and courage of the R.A.F., the French residents in Algiers, with the members of the local branch of the Over-Seas Club and Patriotic League, have forwarded £220 to the Over-Seas Club and Patriotic League, Aldwych, in aid of their R.A.F. Hospital Fund. The R.A.F. Auxiliary Hospital in Shirley Park is known as the Over-Seas Club branch, as a tribute to the generosity of members who have helped to defray its cost.

A DESERVED HONOUR.

The President of the French Republic has conferred the Cross of Chevalier of the Legion of Honour on Capt. Wedgwood Benn, D.S.O., D.F.C., M.P.

THE DISAPPEARANCE OF LIEUT. GARROS.

According to Reuter's Amsterdam correspondent, a Berlin telegram, received on Oct. 15th, says Lieut. Roland Garros was shot down and killed on the German side of the lines on Oct. 5th.

NEW ZEALAND AVIATORS.

According to the "Daily Chronicle" of Oct. 17th, interesting news comes from New Zealand as to the enthusiasm for flying which is producing splendidly efficient aviators. The first to gain a certificate in the Canterbury school was Edwin Wilding, younger brother of the late Anthony Wilding, lawn-tennis champion and gallant soldier.

More applicants than there is room to accommodate have come forward eagerly. One of the expert young aviators is a Maori. The climate and air conditions enable men to put in more work than they do in this country. Since June 1917, when the school started, there has been remarkable progress, and the Hon. H. F. Wigram, M.L.C., is much to be congratulated.

CONCERNING W.R.A.F.S.

At the Mansion House on Oct. 18th, at a meeting held in support of the Women's Active Service Club at 48 and 49, Eaton Square, Lord Milner spoke on behalf of the W.A.A.C., and Vice-Admiral Heath on behalf of the W.R.N.S.

Maj.-Gen. W. S. Braneker (Master-General of Personnel, R.A.F.) said, on behalf of the W.R.A.F., that he thought they were now the greatest employers of immobile women—those who lived at home. Fresh demands were being made on the Royal Air Force every day. The organisation involved about 50 individuals for every aeroplane flying at the front. Women were replacing men in almost every job in the Royal Air Force, except as pilots, and he thought that would come before long. (Cheers.) Everywhere he went he heard the highest praise of the work these women were doing.

[Always provided that their officers are of the material of which officers are made. Incidentally, an immobile woman sounds extremely uninteresting. Also, judging from what one sees, one is given the impression that most of the W.R.A.Fs. are automobile women.—Ed.]

AIRY NOTHINGS.

Oct. 18th, 1918.

To the Editor of The Aeroplane.

Sir,—

"R. H. B." is so amusing as a reviewer that in these strenuous times it seems a little ungracious to cavil. Persiflage becomes him. He is frequently entertaining in proportion to his failure to understand something in the book of which he is writing. He is not entertaining when he discusses the price of books. If he knew anything of the cost of paper, of printers' charges due to ever-increasing wages, and of the price demanded for the most ordinary cloth board binding, to say nothing of the wholly improper desire of author and publisher to see some return, he would not suggest that Capt. Barber's "Airy Nothings" is expensive. It would at any time be a half-crown book; if prices were advanced commensurately with cost of production "Airy Nothings" would be issued, not at 3s 6d., but 5s.

Yours very truly,

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W. L. Wood, Director.

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FROM THE "LONDON GAZETTE."

Air Ministry, Oct. 15th.

R.A.F.—The following temp.. appts. are made :—

Brig.-Gen. Administration.— Lt.-Col. J. A. Houlson-Craufurd, and to be temp. Brig.-Gen. while so empld., vice Lt.-Col. (temp. Brig.-Gen.) B. C. Fellows, Oct. 1st.

Staff Officer, 3rd Cl.—(Air) Lt. J. Patrick, and to be temp. Capt. while so empld., June 10th.

Flying Branch.—Capt. H. H. Balfour, M.C., to be temp. Maj. while empld. as Maj. (A.), Sept. 17th.

Lts. to be temp. Capts. while empld. as Capts. :—A. W. E. Reeves, July 18th; R. Bolton, Sept. 9th; J. S. McDonald, Sept. 17th; W. J. Pace, D.F.C., Sept. 20th; M. R. James, D.F.C., Sept. 23rd; H. S. Preston, Sept. 27th; R. Sykes, J. D. I. Hardman, T. C. Traill, A. H. Burt, Sept. 28th; R. E. Dodd, R. Russell, Sept. 30th; G. A. Flavelle, Oct. 1st; R. Johnstone, A. T. Drinkwater, E. E. Wright, Oct. 2nd; M. A. Newman, B. E. Barnum, Oct. 3rd; C. E. H. Allen, F. J Phillips, G. W. Biles, Oct. 4th; I. Welby, M.C., Oct. 8th.

Lts. to be temp. Capts. while empld. as Capts. (A. and S.) :—W. R. Curtis, July 29th; E. C. R. Stoneman, J. K. A. Jeakes, Sept. 9th.

Lt. H. M. Golding to be temp. Capt. while empld. as Capt (O.), Oct. 5th.

F. G. Browne (late Flt. Sub-Lt., R.N.A.S.) is granted a temp. commn. as Lt. (A. and S.), Sept. 14th, but with seny. (without pay and allowances) from April 1st, and to take prec. next below R. Harris).

Lt. (Hon. Capt.) G. M. Puckridge to be Lt. (A.), and to be Hon. Capt. from Obsr. Officer, Sept. 21st.

Lts., Obsr Officers, to be Lts. (A.) :—K. C. Leslie, Sept. 22nd; L. M. Glover, Sept. 24th; W. J. Corney, E. W. Trotman, Sept. 25th; H. J. L. Kirkpatrick, Sept. 28th

The following Flt Cadets are granted temp. comms. as Sec. Lts. (A.) :—W. N. Broad, J. H. Shaw, H. B. Morris, P. Richardson, G. W. Fitchie, R. Maynard, G. F. Young, Sept. 29th; R. Woodhead, H. C. Pendle, C. W Pape, A. V. Heslop, H. E. Filmer, H. F. Walters, R. N. Bullock, J. F. Gaffney, D. C. Watson, F. G. Sinclair, E. V. W. Cornabie, W. J. Wickens, G. W. Yallop, G. Biddell, J. G. Nicholls, F. R. Steggall, R. J. N. McGuire, F. J. Smith, R. S. Nicholl, T. Rajlton, W. J. W. Potter, F. C. L. Young, J. H Gibson, G. A. Atkinson, R. D. Quin, G. Turner, W. Mills, Sept. 30th; C. H. Leng, F. L. D. Crump, A. Sydall, E. W. Foster, Oct. 1st; A. L. Matson, E. F. Hodgson, A. Watson, S. A. Scriven, Oct. 2nd; E. Wrangham, R. Coombes-White, H. A. Graham, Oct. 3rd; C. B. Parsons, Oct. 4th; R. C. Duncan, Oct. 5th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. comms. as Sec. Lts. (A.) :—C. V. Ronchi, Sept. 20th; P. L. T. Lewin, E. G. King, Sept. 21st; C. K. Carter, Sept. 22nd; A. C. Marshall, Sept. 23rd; J. E. Jackson, Sept. 24th; J. D Podmore, A. B. Beesley, Sept. 25th; G. H. Whitehead, Sept. 28th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.) :—N. S. Swan, July 15th; G. M Trundle, July 19th; H. A. O'Donnell, July 26th; W. M. Gourlay, Aug. 18th; G. S. Daniel, Sept. 19th; G. O. Ford, Sept. 22nd; C. J. Bevan, D. D. McAlpin, J. H. Lorimer, L. S. Harvey, L. O. B. Russell, A. Holdsworth, F. N. Hargreaves, Sept. 23rd; S. F. Morrisey, G. S. Fenwick, V. Lock, R. W. F. C. Frost, M. Arias, G. D. Green, J. C. Crawford, J. W. Abray, L. M. Pickwick, Sept. 24th; A. G. Baker, T. Dixon, E. Taviner, W. P. Taltavall, H. S. Batting, L. S. Barlow, Sept. 25th; H. M. Tudor, W. H. Bennett, L. S. Mersh, C. F. Robinson, H. Mason, L. D. Delapina, Sept. 26th; J. Hyde, W. A. Down, H. C. B. Brudenell, Sept. 27th; J. Burt, R. G. Burns, L. A. Brais, C. G. Knowles, P. H. Clarke, Sept. 28th.

The following are granted temp. comms. as Sec. Lts (A.) :—H. E. Holmes (Sec. Lt., R.G.A., T.F.), Sept. 19th; R. H. Thompson (temp. Sec. Lt., Rif. Brig.), Sept. 22nd; R. H. Stonmill, M.M. (temp. Lt., R. Lanc. R.), and to be Hon. Lt.; W. Garbett (Sec. Lt., E. York. R., Spec. Res.); H. M. P. Hewett (Capt., Dgn. Gds.), and to be Hon. Capt., Sept. 23rd; R. Girvan (Lt., Sco. Rif., Spec. Res.), and to be Hon. Lt.; E. G. Bermejo (temp. Sec. Lt., Ches. R.), Sept. 24th; A. D. McDonald (temp. Sec. Lt., Essex R.); H. I. Marsh (temp. Sec. Lt., Glouc. R.); G. H. Pascal (Sec. Lt., R.F.A., Spec. Res.); B. A. Greenfield (temp. Sec. Lt., Worc. R.); H. V. Edwards (temp. Sec. Lt., R. Suss. R.); J. G. J. McDermont (Sec. Lt., Lein. R., Spec. Res.); W. J. D. Shore (Sec. Lt., Lond. R., T.F.), Sept. 25th; G. Dania (Lt., R.F.A., Spec. Res.), and to be Hon. Lt.; L. F. Ashley (Sec. Lt., W. York. R., Spec. Res.); P. Pyne (Lt., Lond. R., T.F.), and to be Hon. Lt.; A. Thom (temp. Sec. Lt., Durh. L.I.), Sept 26th; G. H Turner, M.C. (Lt., R.F.A., Spec. Res.), and to be Hon Lt, Sept. 27th; A. G. Palin (temp. Sec. Lt., K.R.R.C.); F. C. Farrington, M.C. (Sec. Lt., R.F.A.); E. Shufflebotham (temp. Sec. Lt., R. Fus.), Sept. 28th.

The following Flt. Cadets are granted temp. comms. as Sec. Lts (S.) :—F. Tomlinson, Oct. 2nd; D. H. Jones, Oct. 3rd.

S. H. Hall, P.F.O. (late R.N.A.S.), is granted a temp. commn. as Sec. Lt. (S.), Sept. 26th

H. W. Lester (late Flt. Sub.-Lt., R.N.) is granted a temp. commn. as Sec. Lt. (A. and S.), and to be Hon. Lt., Oct. 14th.

The following Flt. Cadets are granted temp. comms. as Sec. Lts. (A. and S.) :—G. E. Cartwright, April 22nd; A. E. Millar, June 22nd; J. A. Woodhead, July 6th; C. M. Taylor, July 12th; S. A. Lane, July 13th; J. Wallis, July 14th; A. E. Johnson, T. W. Hart, July 16th; P. Thomas, July 19th; O. E. Coleman, July 19th; C. D. Adams, July 21st; C. Bunch, L. W. John, July 25th; R. H. Byrom, M. Graham, July 27th; A. Turner, A. E. Page, July 29th; H. Godfrey, H. J. Randall, T. W. Ashton, July 30th; H. H. Purkis, Aug. 2nd; J. S. Napper, Aug. 3rd; H. F. Fisher, Aug 10th; H. A. Denny, Aug. 17th; E. C McCall, Aug. 23rd; P. A. Liebenberg, S. A. Pindar, Aug. 24th; A. B. C Emmett, J. D. Farquharson, J. Hogg, Aug. 31st; R. H. Dures, R. R. Nott, Sept. 6th. J. A. P. Hunt, Sept. 20th; E. H. Halley, Oct 5th; W. G. Howse, C. W. Mann, J. L. Morton, F. J. J. Paquet, V. T Harris, R. B. Maxwell, B. B. Melvill, H. C. Munro, J. S. Morton, E. T. Mills, R. T. Riley, S. G. Kiddie, A. Nicholson, C. B. Tod, W. T. Sendin, C. P. Smith, J. Ramage, L. F. Shipp, R. H. Hartley, J. L. Merrington, C. W. Travers, W. C. B. Ashfield, W. G. Staples, J. V. Melvill, C. M. Hill, A. H. C. McGivern, J. E. Knaggs, H. L. Magid, A. E. Mallinson, A. R. De-Villiers-Van-Os, Oct. 12th.

The following Officers are ante-dated in their appts. as Sec. Lts (A. and S.) with effect from the dates stated :—G. A. Kelley, July 30th (name incorrectly stated G. A. Kelly, p. 10552, "London Gazette," Sept. 6th); W. M. Crofton, Aug. 5th.

The following Flt. Cadets are granted temp. comms. as Sec. Lts. (Obsr. Officers) :—A. M. Anderson, April 18th; T. B Lamble, T. W. Rowlands, May 25th; E. V. L. Keating, H. Park, E. Smith, July 13th; W. R. H. Porter, E. L. Mobbs, H. S. Laidlaw, G. Brown, L. T. Rennie, F. W. Harrison, S. W. H. Reynolds, Aug. 4th; R. Baird, Sept. 2nd; A. V. Hawkins, F. W. Ball, H. S. Bolcock, W. M. Hall, G. H. Ellingham, D. H. Sutherland, H. A. Floyd, R. S. Stainsby, J. F. Rowbotham, M. H. Molyneux, A. Brufton, T. Stroud, Oct. 7th; H. W. Phillips, J. M. Theaker, N. J. Spencer, S. L. Cox, B. Ibison, H. V. Peberdy, A. E. Gwyther, Oct. 9th, D. M. Fraser, H. P. C. Green, P. D. Broughton, J. Morton, E. B. Owen, L. H. Ransom, C. De Laubenque, E. H. Leavers, G. Harvey, I. H. Jenkins, H. C. Monckton, Oct. 10th; B. E. Sadler, F. H. Reed, J. E. Wildish, J. J. V. Barlow, R. E. Nixon, E. Dodgson, Oct. 12th; L. G. Newman, W. B. H. Eaton, A. R. Murray, W. J. Ermin, Oct. 13th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—W. Reader, F. E. Proctor, W. Blackburn, J. W. Kelland, N. F. Hirst, A. D. Neish, June 21st, E. G. Holloway, Sept. 26th; J. P. Coleman (date of first commn. Dec. 13th, 1917); J. Smith (date of first commn. Nov. 8th, 1917), Sept. 28th; F. Bland, Sept. 30th

The following are granted temp. comms. as Sec. Lts. (Obsr. Officers) :—G. L. Parkinson, M.C. (Lt., Durh. L.I., T.F.), and to be Hon. Lt.; H. Reddaway (Lt., R. Fus., Spec. Res.), and to be Hon. Lt.; J. C. Roadhouse (temp. Sec. Lt., York and Lanc. R.); H. G. Strange (temp. Lt., Middx. R.), and to be Hon. Lt., June 21st; D. McDinwiddie (temp. Capt., R.E.), and to be Hon. Capt., Sept 10th; I. H. Stockwood (temp. Capt., Tank Corps), and to be Hon. Capt.; A. L. A. M. Pitot (Sec. Lt., R.E.); R. C. Jones, M.C. (temp. Capt, Rif. Brig.), and to be Hon. Capt., Sept. 13th; L. F. Edwards (Lt., Essex R., T.F.), and to be Hon. Lt., Sept. 17th; W. F. Harwood (temp. Sec. Lt., Norf. R.), T. Welsh (Sec. Lt., R. War. R., Spec. Res.), Sept. 20th; L. Allden (Sec. Lt., Lond. R., T.F.), Sept. 23rd; N. W. Read (temp. Lt., E. York. R.), and to be Hon. Lt., C. M. W. Elliott (Sec. Lt., E. Lanc. R., T.F.), Sept. 24th; J. S. Maquire (Lt., N. Staffs R., Spec. Res.), and to be Hon. Lt., J. C. McIlroy (Lt., R.F.A., T.F.), and to be Hon. Lt., W. Seagram (Sec. Lt., R.F.A., Spec. Res.), H. S. Openshaw, M.C. (temp. Capt., E. Surr. R.), and to be Hon Capt., J F. Swindells (Lt., Ches. R., T.F.), and to be Hon. Lt., Sept 25th; H McF. Crichton, M.C. (Lt., R. Scots, T.F.), and to be Hon. Lt., J. G. Hadden (Lt., R. Scots, T.F.), and to be Hon. Lt., E. D. Buckland (Sec. Lt., Lond. R., T.F.), Sept. 26th.

The following Flt. Cadets are granted temp. comms. as Sec. Lts. (Dir.) :—G. E. Page, A. G. Peake, L. S. Anderson, F. A. Mathews, G. Fraser, P. H. Devenish, A. O. C. Cox, A. Bent, T. V. Beatty, A. Rouse, C. D. Insall, Aug. 21st.

The following Capts. relinquish their comms. on account of ill-health, and are granted hon. rank of Capt. :—E. L. Ford, A. W. J. Ashe, Oct. 16th.

Lt. R. P. Atwood relinquishes his comm. on account of ill-health, and is granted hon. rank of Lt., Oct. 16th.

Lt. W. R. H. Standing relinquishes his comm. on account of ill-health contracted on active service, and is granted hon. rank of Lt., Oct. 16th.

Lt. C. C French (Lt., R.F.A., Spec. Res.) relinquishes his comm. on account of ill-health contracted on active service, Oct. 16th.

Lt. R. C. B. Riley (Lt., War. Yeo., T.F.) relinquishes his comm. on account of ill-health caused by wounds, Oct. 16th

Lt. T. E. Blears (Lt., Lanc. Fus., T.F.) relinquishes his comm. on ceasing to be empld., Oct. 1st.

Lt. R. D. Forbes resigns his comm., Oct 16th.

The following Lts. relinquish their comms., having been found permanently unfit for further instruction as Pilots or Obsrs. :—R. D Buxton, E. C. Matthews, Oct. 19th

The following Sec. Lts. relinquish their comms., having been found permanently unfit for further instruction as Pilots or Obsrs. :—R. McCullough, F. S. Legg, T. U. J. Nicholas, H. J. Morin, Oct. 16th.

The following Sec. Lts. relinquish their comms., having been found permanently unfit for further instruction as Pilots or Obsrs. :—W. R. Evans, A. E. Ross, W. E. Brotherton, E. L. Day, R. Pattison, R. Smith, Oct. 19th.

Sec. Lt. L. J. Evans (Sec. Lt., Linc. R., T.F.) relinquishes his comm. on account of ill-health, Oct. 16th.

The Christian names of Sec. Lt. Alexander Vallance Campbell are as now stated, and not as in the "Gazette" of Oct. 4th.

The notification in "Gazette," Aug. 23rd, concerning Sec. Lt. R. E. York is cancelled

Administrative Branch.—Capt. D. E. Garnett to be Capt., from (T.), Aug. 19th.

Lts. to be temp Capts. while empld as Capts.:—H. F. Walker, from (A.); April 10th, R. M. Spence, Sept. 1st; H. D. A. Dart, Sept. 13th; N. B. Morphy, Oct. 1st.

Sec. Lt. (Hon. Capt.) R. Falcon-Cooke to be temp. Capt. while empld. as Capt., Oct. 5th.

Lt. (temp. Capt.) T. V. L. Hall to be Lt., and to relinquish the temp. rank of Capt., Sept. 1st.

Lts. to be Lts.:—O. J. Gagnier, from (A.), June 13th; N. S. Wolfedale, from (O.), Aug. 9th; G. M. Atkinson, from (A.), Aug. 24th; J. D. S. Denholm, from (O.), Aug. 25th; W. Law, from (O.), Aug. 28th; F. F. Sinclair, from (A.); O. Clayton, from (A.); A. E. R. Aldridge, from (O.), Sept. 7th; H. E. Hall, from (O.); C. L. Shaw, from (O.), Sept. 9th; R. H. Shepherd, from (O.), Sept. 14th; J. Pilkington, from (O.), Sept. 17th; (Hon. Capt.) A. G. A. Hodges, from (K.B.), Sept. 19th, F. R. Hunt, from (A.); R. Massey, from (K.B.), Sept. 24th; W. G. Gunning, from (A.), Oct. 5th.

Capt. R. C. Talbot reverts to Lt. (K.B.) at his own request, Sept. 30th.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—(Hon. Lt.) F. E. Gauntlett, Aug. 24th; (Hon. Lt.) G. A. McMillan, Sept. 23rd; P. Gent, Oct. 6th.

Sec. Lt. H. Preston to be Sec. Lt., from (A.), Sept. 28th.

Sec. Lts. (Obsr. Officers) to be Sec. Lts.:—E. J. Munson, Aug. 27th; H. G. Hooker, Sept. 21st; R. W. Blundell, Sept. 23rd; G. P. Colin, Sept. 24th.

Sec. Lts. (T.) to be Sec. Lts.:—H. L. Whitelaw, Aug 29th; L. B. Lewis, Sept 2nd; P. W. Renshaw, Sept. 21st; E. O. Byam, Sept. 30th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. la T. Templeton, July 27th; L. B. Lyle, C. H. Cresswell, Aug. 20th; C. G. Rickards, Sept. 12th; T. A. E. Layborn, Sept. 14th; W. J. Scarff, Sept 18th; W. J. C. Brown, Sept. 19th.

L. B. Mills, M.C. (temp. Capt., attd. E. Surr. R.), is granted a temp. commn. as Capt., April 1st.

A. Innes, M.C. (Capt., R. Highrs., T.F.), is granted a temp. commn. as Capt., April 1st, and to be temp Maj. while holding a special appt. at the Ministry of Munitions, May 24th.

H. Pooley (temp. Lt., attd. Glouc. R.) is granted a temp. commn. as Lt., April 1st, and to be temp. Capt. while holding a special appt. at the Ministry of Munitions, May 24th.

J. J. S. Naylor (Lt., R.N.V.R.) is granted a temp. commn. as Capt., July 30th.

H. McDonnell (Qrmr. and Capt., Spec List) is granted a temp. commn. as Capt., Oct. 3rd.

The following are granted temp. commns. as Lts.:—G. B. Booth (Lt., Middx. R.), F. R. Haggie (temp. Lt., Res. R. of Cav.), Sept. 27th; M. A. Trotter (Capt., Norf. R., T.F.), and to be Hon. Capt., Sept. 30th; H. Butler (Lt., Dorset R.), Oct. 1st; F. V. Goode (Lt., Dorset R.), Oct. 3rd.

The initials of Lt. J. F. Shaw (Qrmr. and Lt., R.E.) are as now stated, and not as in "Gazette," Aug. 16th.

J. B. Slater is granted a temp. commn. as Sec. Lt., and to be temp. Lt. while specially empld., Sept. 18th.

The following are granted temp. commns. as Sec. Lts.:—J. C. Bain (temp. Lt., E. York. R.), and to be Hon. Lt., Aug. 22nd; E. Winter (temp. Sec. Lt., Labour Corps), Sept. 3rd; B. J. Crewe (Sec. Lt., Oxf. and Bucks L.I.), Sept. 17th; G. Dolley (Hon. Sec. Lt., R.A.F.), R. Lyne, A. Milne, J. H. Payne, J. Witton, Oct. 10th; J. Fisher (Lt., S.A. Forces), and to be Hon. Lt., Oct. 12th; F. T. Wickwar, Oct. 14th.

The date of appt. of the following Sec. Lts. is Sept. 16th, and not Sept. 14th, as in "Gazette," Sept. 20th:—T. R. Davies, F. A. Pritchard, W. C. van Eeden, A. F. Rees, W. Andrews, A. H. Warriner, W. C. Brown, H. E. Haddon, W. C. Cranfield, H. W. F. Long, J. S. Begg, H. J. De Waal, W. H. Hitt, W. Vaughan, J. O. Miles, C. W. Grey, G. G. Kirby, T. Mattocks, R. M. Balston, C. Jones, R. O. Griffith.

Capt. F. S. Farlow (Lt., R.N.) relinquishes his commn. on ceasing to be empld., Sept. 25th.

Lt. J. B. Ackroyd relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Oct. 16th.

Lt. T. S. L. Mann relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 16th.

Sec. Lt. J. G. Newton resigns his commn. and is granted the hon. rank of Sec. Lt., Oct. 16th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are now granted the hon. rank of Sec. Lt.:—E. Whitfield, G. M. V. Ventura, A. H. Pearson, Oct. 16th.

Technical Branch.—Majs. to be temp. Lt.-Cols. whilst empld. as Lt.-Cols.:—A. E. G. MacCullum, J. McCrae, M.B.E., July 12th.

Capt. M. Keegan to be temp. Maj. while empld. as Maj., Sept. 1st.

Capt. A. C. Williams to be temp. Maj. while empld. as Maj., Sept. 25th.

Capt. W. R. Abbott to be Capt., from (O.), Sept. 9th.

Lt. (actg. Capt.) G. S. Hallas to be temp. Capt. while empld. as Capt., Sept. 16th.

Lts. to be Lts.:—T. D. H. Silver, from (O.), Aug. 24th; F. E. White, from (Ad.), Aug. 26th; J. Fleming, from (O.), Aug. 29th; W. F. Mytton, from (A.), Aug. 31st; H. E. Hall, from (O.); J. M. R. E. St. Amory, from (A.), Sept. 7th; L. Marsh, from (O.), Sept 13th; E. D. Aldridge, from (A.), Oct. 7th.

Sec. Lt. P. H. Morrish to be temp. Lt. while empld. as Lt., Oct. 2nd.

Lts. (A.) to be Lts.:—L. W. Osman, June 18th; J. T. Thornhill, Aug. 22nd; D. J. A. O'Brien, Aug. 23rd, R. G. Hughff, Aug. 29th; T. S. Griffiths, Sept. 24th.

Lts. (Obsr. Officers) to be Lts.:—J. G. Proger, Aug. 26th.; P. N. Shone, Aug. 29th.

H. L. Templer (temp. Maj., A.S.C.) is granted a temp. commn. as Maj., April 1st.

R. Thynne (temp. Lt., A.S.C.) is granted a temp. commn. as Lt., and to be temp. Maj. while holding a special appt. at the Ministry of Munitions, April 1st.

The following are granted temp. commns. as Capts.:—C. E. Elliott (Capt., Hamps. R., T.F.), W. Calder (temp. Lt., R.E.), April 1st.

The following are granted temp. commns. as Lts., April 1st, and to be temp. Capts. while holding a special appt. at the Ministry of Munitions:—L. F. Buckingham (temp. Sec. Lt., attd. R. Fus.), F. E. Mocatta (Capt., R.F.A., Spec. Res.), A. W. Pine (Lt., Essex R., T.F.), F. E. Reiss, M.C. (temp. Lt., attd. R. Fus.), G. V. Stringer, M.C. (Lt., R.F.A., T.F.), May 24th.

W. J. Palmer (temp Lt., Gen. List, New Armies) is granted a temp. commn. as Sec. Lt., April 1st, and to be temp. Capt. while holding a special appt. at Ministry of Munitions, May 24th.

Sec. Lts. to be Sec. Lts.:—A. J. Evans, from (Ad.), Aug. 22nd; H. Hayter, from (Ad.), Sept. 7th; (Hon. Lt.) R. E. Moore, and to be Hon. Lt., from (Ad.), Sept. 19th.

Sec. Lt. E. Hattemore (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., Sept. 16th.

J. E. Koefod, Prob. Flt. Officer (late R.N.A.S.), is granted a temp. commn. as Sec. Lt., Oct. 10th.

The following are granted temp. commns. as Sec. Lts.:—H. P. Northcote (Lt., W. York. R., Spec. Res.), and to be Hon. Lt., Aug. 24th; W. R. C. Hodge (Lt., Kent Cyclist Corps, T.F.), and to be Hon. Lt., Aug. 26th; E. R. Loder (Capt., Bedf. R., Spec. Res.), and to be Hon. Capt., Sept. 9th; A. J. D. Henry (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Sept. 12th; W. Randell (Lt., Middx. R., T.F.), and to be Hon. Lt., Sept. 28th.

Lt. (Hon. Capt.) J. W. G. Mackinlay relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Oct. 16th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—H. M. Temple, H. F. Farr, Oct. 16th.

Sec. Lt. A. McD. Hamilton resigns his commn., Oct. 16th.

Medical Branch.—J. Maclaughlin (Lt.-Col., ret., R.A.M.C.) is granted a temp. commn. as Capt., and to be Hon. Lt.-Col., Oct. 14th.

The following are granted temp. commns. as Lts.:—F. S. Drewe, Oct. 11th; A. Henderson, Oct. 14th.

Dental Branch.—The following are granted temp. commns. as Lts.:—A. E. F. Peaty, F. J. Bradburn, Oct. 11th.

Memoranda.—Maj.-Gen. M. E. F. Kerr, C.B., M.V.O., relinquishes his commn. on ceasing to be empld., Oct. 14th.

Capt. J. H. Vickers to be actg. Maj. (without the pay and allowances of that rank) whilst specially empld., Sept. 6th.

F. Hudson is granted a temp. hon. commn. as Capt., Oct. 15th.

War Office, Oct. 17th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—The undermentioned appts. are made:—Asst. Instrs. in Gunnery.—(Graded as Equipt. Officers, 2nd Cl., from Asst. Instrs. in Gunnery (graded as Equipt. Officers, 3rd Cl.).—Temp. Lt. R. C. Graham, Gen. List, Feb. 1st, 1918.

Depot Comdr.—Capt. (temp. Maj.) H. B. T. Childs, Spec. Res., from a Park Comdr., and to be temp. Lt.-Col. whilst so empld., Dec. 14th, 1917.

Territorial Force.—R.E.—The undermentioned to be Lts.:—Sec. Lt. (now temp. Capt., R.A.F.) R. J. Anderson, next below Lt. S. G. Stanton, and remain secd., retaining the temp. rank of Capt., R.A.F., July 1st, 1917

Air Ministry, Oct 18th

R.A.F.—The following temp. appt. is made at the Air Ministry:—Staff Officer, 3rd Cl.—Capt. J. P. Cherry, vice Capt. G. G. Braithwaite, Sept. 1st.

The following temp. appts. are made:—Staff Officers, 3rd Cl.—R. G. Parry, D.S.O. (Eng.-Lt., R.N.), and is granted a temp. commn. as Capt., July 4th; Lt. L. C. Bygrave, and to be temp. Capt. while so empld., July 7th

Staff Officer, 4th Cl. (1st Gr.—Lt. S. J. Stocks, and to be temp. Capt. while so empld., Oct. 1st.

Staff Officer, 4th Cl. (2nd Gr.).—Lt. (Hon. Capt.) G. MacD. Turner, Oct. 16th.

Flying Branch.—Lts. to be temp. Capts. while empld. as Capts.:—F. B. O. L. S. de Morency, Aug. 1st; P. Grossett, R. C. Cain, D.F.C., R. T. Minors, Oct. 7th; J. S. Hervey, Oct. 8th; S. W. Highwood, Oct. 9th; 1914; G. R. Riley, J. P. Findlay, Oct. 14th.

Sec. Lt. V. H. Hervey to be temp. Capt. whilst empld. as Capt., Oct. 8th.

Lt. W. R. S. Humphreys to be Lt., from (T.), Oct. 10th.

The notification in "Gazette" of Oct. 1st concerning Lt. J. V. Turner is cancelled.

Lt. (Hon. Capt.) W. G. B. Marti, M.C., to be Lt. (A.), and to be Hon. Capt., from Obsr. Officer, Aug. 10th.

The following Lts. (Obsr. Officers) are confirmed in their rank as Lts. (A.):—L. R. B. Spence, July 2nd; J. B. Weiss, July 4th; H. J. P. Bomford, July 22nd; L. C. Bailey, July 23rd; P. P. Butters, Aug. 4th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—V. M. Mitchell, July 30th; B. Rogers, Aug. 8th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—E. R. Stockport, Sept. 21st; W. G. Fleming, J. Dwerryhouse, E. Willox, Sept. 25th; W. J. Delaney, W. J. Bixel, Sept. 26th; F. W. Leach, Sept. 28th; T. T. Williams, Oct. 1st; R. S. Wreathall, E. G. A. Breed, P. R. Blythe, G. C. F. Ely, P. H. Davies, Oct. 3rd; C. R. Curry, H. S. Rowland, F. H. Brewitt, Oct. 4th; W. De W. Atkinson, L. C. Mullins, G. W. Thornton-Inman, E. H. Peet, Oct. 5th.

The following are granted temp. commns. as Sec. Lts. (A.):—G. R. Wright (Sec. Lt., Hamps. R., T.F.), July 17th; G. E. Clavey (Lt., R.F.A.), and to be Hon. Lt., July 21st; P. Bailey (temp. Lt., High. L.I., Spec. Res.), and to be Hon. Lt., July 30th; C. E. Turner (temp. Capt., Worc. R.), and to be Hon. Capt., R. R. Thompson (temp. Lt., M.G. Corps), and to be Hon. Lt., July 31st; S. P. Pattison (Lt., Lond. R., T.F.), and to be Hon. Lt., T. P. Robinson (temp. Lt., R. Dub. Fus.), and to be Hon. Lt., Aug. 5th; E. P. Blackmore (temp. Sec. Lt., Lan. Fus.), Aug. 6th. Flt. Cadet A. Ingram is granted a temp. commn. as Sec. Lt. (A. and S.), Aug. 31st.

The following are granted temp. commns. as Sec. Lts. (K.B.):—C. J. E. Malet-Veale (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., T. W. Woodrow (Sec. Lt., R.F.A.), June 17th.

The surname of Sec. Lt. L. S. Eckert is as now described and not as in "Gazette," June 18th.

The surname of Sec. Lt. P. R. Davis is as now described and not as in "Gazette" June 18th.

The Christian name of Flt. Cadet Thomas Lowes Calvert is as now described and not as in "Gazette" Sept. 24th.

The following officers are antedated in their appts. as Sec. Lts. (A. and S.), with effect from the dates stated:—W. Campbell, April 5th; J. V. Flanagan, June 23rd; F. C. Annett, July 10th; S. Campan, July 15th; C. Davidson, July 30th.

Lt. L. Wycherley to be Lt. Obsr. Officer from (A.), July 21st.

Sec. Lt. S. D. Evans (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. Obsr. Officer, July 20th.

The following Prob. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts., Obsr. Officers:—J. H. Spracklin, Sept. 20th; G. M. Butters, Sept. 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. Obsr. Officers:—S. King, July 20th; R. A. Hacking, H. V. Stevens, F. H. Snoxell, O. F. Harrison, W. G. Lowcock, O. Matthews, A. J. Bonar, E. T. Sutherland, Oct. 4th; A. H. Taylor, Oct. 5th; W. C. Aitchley, J. H. Bradbury, W. Ll. Beck, A. S. McNaught, J. Mortimer, J. Mitchell, T. Ll. Oliver, H. W. Robinson, C. Shaw, W. J. Sutherland, A. R. H. Young, Oct. 7th; F. H. H. White, A. Makins, C. T. Halliday, J. W. Gardner, F. Heath, F. L. P. Smith, Oct. 8th; J. R. Guthridge, W. W. MacCharles, H. G. McEwan, R. V. Dowding, W. J. G. Godden, W. E. De Turberville, F. T. Hewitt, C. Hargreaves, F. W. Smith, W. R. Forster, C. Mackay, A. C. Maynard, Oct. 10th.

The following are granted temp. commns. as Sec. Lt., Obsr. Officers:—O. C. Dawson (temp. Sec. Lt., R.E.), May 1st, A. J. Stevens (temp. Sec. Lt. R. War. R.), July 1st; H. R. Owen (temp. Sec. Lt., Rif. Brig.), July 3rd; T. Comrie (temp. Lt., Gord. Highrs), and to be Hon. Lt., July 25th; R. C. Campbell (Lt., Som. L.I., T.F.), and to be Hon. Lt., Aug. 6th; R. A. Blake (temp. Lt., R.F.A.), and to be Hon. Lt., Aug 10th; P. W. Watson (Sec. Lt. W. York. R., T.F.), R. B. Williamson (temp. Sec. Lt., R. Suss. R.), D. C. Simpson (temp. Sec. Lt., K.R.R.C.),

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W. O'B. Rigden (Lt., Oxf. and Bucks L.I., T.F.), and to be Hon. Lt., P. G. Hutson (temp. Lt., Middx. R.), and to be Hon. Lt., E. L. Hallett (Sec. Lt., R. Suss. R., T.F.), F. J. Smith, M.C., M.M. (Sec. Lt., R. Berks R.), R. M. Colebrook (Capt., Hamp. R., Spec. Res.), and to be Hon. Capt., F. L. Bax (Sec. Lt., R.F.A., Spec. Res.), S. E. Foreman (temp. Sec. Lt., Northd. Fus.), H. Knight, M.C. (temp. Sec. Lt., W. York. R.), H. Lancaster (Sec. Lt., N. Lan. R., T.F.), R. T. Smith (Lt., C. Ont. R., C.E.F.), and to be Hon. Lt., C. W. J. Lawrence (temp. Sec. Lt., S. Lan. R.), E. G. Lunn (temp. Lt., Middx. R.), and to be Hon. Lt., M. W. White (temp. Sec. Lt., Middx. R.), Sept. 28th; D. Martin (temp. Sec. Lt., Northd. Fus.), E. Bower (temp. Sec. Lt., Lan. Fus.), R. Riffkin (temp. Sec. Lt., Manch. R.), H. B. Smith (Sec. Lt., Glouc. R., T.F.), A. K. Robinson (temp Sec. Lt., attd. York and Lan. R.), H. J. Rayment (temp. Sec. Lt., Norf. R.), G. E. Moore, M.C. (temp. Sec. Lt., R. Fus.), P. Cartwright (temp. Sec. Lt., Yorks. L.I.), Sept. 30th; J. C. Pritchard (Sec Lt., R.W. Kent R., T.F.), Oct. 1st; V. Rose (temp. Sec. Lt., R.E.), Oct. 4th; P. R. Tuckwell (temp. Lt., Devon. R.), and to be Hon. Lt., Oct. 7th; A. A. Turvey (temp. Sec. Lt., Notts. and Derby R.) W. Morrison (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., T. S. Duddy, D.C.M. (Sec. Lt., Durh. L.I.), Oct. 9th; H. Vanstone (temp. Sec. Lt., R.E.), Oct. 13th.

The notification in "Gazette," July 19th, concerning Sec. Lt. H. R. Owen is cancelled.

Maj. E. J. E. Hawkins (Capt., Ind. Army Res. of Officers) relinquishes his commn. on ceasing to be empld., Oct. 7th.

The following relinquish their commns. on account of ill-health contracted on active service:—Capt. (Hon. Maj.) K. E. Kennedy (Maj., C.F.A., C.E.F.), Capt. E. C. Sheppard (Saskatchewan R.), Oct. 19th.

Lt. (temp. Capt.) F. B. Scullard (Capt., Quebec R., C.E.F.) relinquishes his commn. on ceasing to be empld., Sept. 25th.

Lt. G. E. Norman (Lt., R. Ir. Rif., Spec. Res.) relinquishes his commn. on ceasing to be empld., Sept. 30th.

Lt. M. L. Hatch (Lt., R.F.A., Spec. Res.) resigns his commn. to resume his medical studies, Sept. 21st.

Sec. Lt. (Hon. Lt.) W. J. Bourne relinquishes his commn. on account of ill-health contracted on active service and is granted the hon. rank of Lt., Oct. 19th.

The following Sec. Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Sec. Lts.:—M. A. Carpenter, C. N. Crofton-Sleigh, Oct. 19th.

Administrative Branch.—Sec. Lt. (temp. Lt.-Col.) W. C. Bersey to relinquish the temp. rank of Lt.-Col., and to be temp. Maj. while empld. as Maj. from (S.O.), Sept. 30th.

Lt. R. L. G. May to be temp. Capt. whilst empld. as Capt., Oct. 9th.

Lt. A. W. R. Matthews to be temp. Capt. (without the pay and allowances of that rank) whilst empld. as Adjt., Oct. 2nd.

Lts. to be Lts.:—H. A. Birks, from (A.), April 18th; H. Delaney, June 4th; H. V. Jerrard, from (A.), June 24th; H. C. Vickery, from (O.), A. S. H. O'Brien, from (O.), July 13th; J. E. R. Hyson, from (A.), July 17th; (Hon. Capt.) W. I. Bailey, from (A.), Aug. 16th; C. C. Matthews, from (A.), Aug. 20th; W. O'Toole, from (O), Sept. 9th; (Hon. Capt.) H. W. Hepburn, from (A), Sept. 13th; H. Brooks, from (O), Oct. 1st; L. G. Hall, from (O), Oct. 5th; C. E. Crowly, from (A), Oct. 7th; M. J. Fenwick, from (A.), Oct. 11th; G. J. Frost, from (A), Oct. 25th; Sec. Lt. H. A. Plater to be Lt. whilst empld. as Lt., Oct. 10th.

The notification in "Gazette" of Oct 4th concerning Lt. F. R. Hunt is cancelled.

W. G. Courthope (Capt., Bedf. R., T.F.) is granted a temp commn. as Capt., Sept. 17th.

The following are granted temp. commns. as Lts.:—H. E. Wild (temp. Lt., Welsh R.), Aug. 17th; W. D. Hogarth (temp. Lt., Spec. List), Sept. 19th; H. S. Weston (temp. Lt., Spec. List), Sept. 20th; H. G. Mitchell (Lt., Hrs.), Oct. 6th; H. S. Sellicks (Qrmr. and Capt., Middx. R.), and to be Hon. Capt., E. King (Lt., R. Ir. R.), T. J. H. Fryer, M.C. (temp Lt., K.R.R.C.), H. G. Whyte (temp. Capt., R. Ir. Fus.) and to be Hon. Capt., Oct. 8th; J. G. Macksey (late Sec. Lt., Middx.R.) is granted a temp. commn. as Sec. Lt., and to be temp. Lt. whilst specially empld., Aug. 1st (in substitution of notification in "Gazette" Aug. 2nd).

The following are granted temp. commns. as Sec. Lts.:—E. A. Burridge (temp. Sec. Lt., Yorks. L. I.), July 18th; S. F. A. Welsh (temp. Sec. Lt., T.R. Bn.), July 21st; J. W. S. Appleton, W. Butler (Qrmr. and Hon. Lt., Worcs. R.), and to be Hon. Lt., S. Dickson (Lt., Ret. List, T.F.), and to be Hon. Lt., A. J. Green, A. J. Higgins, L. B. Hobgen, E. A. Jones-Stewart (Hon. Lt., Ret. List), and to be Hon. Lt., R. D. Thomas (late T./Lt., Worc. R.), and to be Hon. Lt., Oct. 16th.

Capt. T. H. Martin relinquishes his commn., on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Oct. 19th.

Sec. Lt. C. H. Pares relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 19th.

Sec. Lt. C. F. Jackson relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct. 19th.

The following Sec. Lts. resign their commns.:—N. J. B. Hugo, J. M. Largesse, Oct. 19th.

Technical Branch.—Sec. Lt. (temp. Lt.) A. H. Dawson to retain the temp. rank of Lt. while empld. as Lt. from Ad., Aug. 16th.

T. M. Dutton is granted a temp. commn. as Capt., Oct. 16th.

Capt. F. D. Maclean (Capt., R.F.A.) relinquishes his commn. on ceasing to be empld., Sept. 17th.

Lt. J. N. Scovell relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 19th.

Sec. Lt. (Hon. Lt.) D. H. Robinson (S. Staff. R., T.F.) is removed from the R.A.F., Aug. 31st.

Medical Branch.—H. A. Hewat (late temp. Surgn., R.N.) is granted a temp. commn. as Capt., Sept. 5th.

T. D. J. A. Fuller is granted a temp. commn. as Lt., Oct. 17th.

Memoranda.—Lt.-Col. (temp. Col.) Hon. W. F. Forbes-Sempill (Master of Sempill), A.F.C., relinquishes the appt. of Dep. Dir., and retains his temp. rank while specially empld. at the Min. of Muns., Oct. 8th.

J. P. Cherry (Qrmr. and Capt., Durh. L.I.) is granted a temp. commn. as Capt., May 18th.

War Office, Oct. 19th.

REGULAR FORCES.—Staff.—Inspr.-Gen. of Training Establishment.—Dep. Inspr. of Training.—Lt. A. W. H. James, M.C., Hrs., from R.A.F., to remain secd. and to be temp. Lt.-Col. whilst so empld., July 19th, 1918. (Substituted for the notification in the "Gazette" of Sept. 14th, 1918.)

Establishments.—R.F.C.—Mil. Wing.—The undermentioned appt. is made:—Schools of Instrn.—Schools of Aerial Gunnery.—Instr. in Gunnery.—(Graded as an Equipment Officer, 1st Cl.)—Lt. A. W. Phillips, M.C., R. Fus., Spec. Res., from an Asset. Instr. in Gunnery (graded as an Equipment Officer, 2nd Cl.), and to be temp. Capt. whilst so empld., Jan. 25th, 1918.

War Office, Oct. 21st.

A dispatch dated July 20th, dealing with the operations in the vicinity of Cambrai in December, 1917, has been received by the Secretary of State for War from Field-Marshal Sir Douglas Haig, K.C., G.C.B., G.C.V.O., Commanding-in-Chief, British Armies in France. The following extracts deal with the R.A.F.:—

Towards the middle of February, 1918, it became evident that the enemy was preparing for a big offensive on the Western front.

Constant air reconnaissances over the enemy's lines showed that rail and road communications were being improved and ammunition and supply dumps increased along the whole front from Flanders to the Oise.

The work of the Royal Air Force, under command of Maj.-Gen. J. M. Salmond, C.M.G., D.S.O., in co-operation with the other arms, has been brilliant. Throughout the period of active operations our aviators have established and maintained a superiority over the enemy's air forces without parallel since the days of the first Somme battle. Not content with destroying the enemy in the air, they have vigorously attacked his infantry, guns, and transport with bombs and machine-gun fire, and in the fighting south of the Somme in particular gave invaluable assistance to the infantry by these means on numerous occasions. In addition, the usual work of reconnaissance, photography, artillery co-operation, and bombing has been carried out vigorously and with remarkable results.

War Office, Oct. 22nd.

The Secretary of State for War has received a dispatch from Gen. the Earl of Cavan, K.C., K.C.B., Commanding the British Forces in Italy, on operations during the period March 10th to Sept. 14th, 1918, from which the following extract is taken:—

The work of the Royal Air Force under Col. P. B. Joubert, D.S.O., has been consistently brilliant, and the results obtained have, I believe, in proportion to the strength employed, exceeded those obtained in any other theatre of war. Between March 10th and the present date 294 enemy aeroplanes and nine hostile balloons have been destroyed, and this with a loss of 24 machines. Much useful work in co-operation with the artillery has been carried out, and frequent and successful long-distance reconnaissances accomplished.

FROM THE COURT CIRCULAR.

Buckingham Palace, Oct. 19th.

The following Officers were severally introduced into the presence of His Majesty, when the King invested them with the Insignia of the Division of the Order into which they have been admitted:—

A Bar to the Distinguished Service Order.—Maj. Rowland Moon, R.A.F.

The Distinguished Service Order.—Lt. Stewart Culley, R.A.F.

His Majesty then conferred decorations as follows:—

The Military Cross and Bar.—Capt. Richard Wolton, R.A.F.; Lt. Alec Young, R.A.F.

The Military Cross.—Col. Edward Davidson, Gord. Highrs., attd. R.A.F.; Capt. Wilfred Beaver, R.A.F.; Capt. James Burchett, R.A.F.; Capt. Edward Galley, R.A.F.; Capt. Robert Hall, R.A.F.; Capt. William McClatchie, R.A.F.; Capt. Leslie Paling, Sherwood Foresters, attd. R.A.F.; Capt. Leonard Payne, R.A.F.; Capt. Henry Russell, R.A.F.; Capt. Hugh Saunders, R.A.F.; Capt. Lauder Wight, R.A.F.; Capt. Stephen Windsor, S. Wales Bord., attd. R.A.F.; Lt. Anthony Arkell, R.A.F.; Lt. William Clarke, R.G.A., attd. R.A.F.; Lt. Frederick Creek, R.A.F.; Lt. Hector Daniel, R.A.F.; Lt. Cyril Hayes, R.A.F.; Lt. Reginald Hobbs, R.A.F.

OFFICIAL COMMUNIQUES.

NAVAL.

Admiralty Communiqués.

Oct. 15th.—Operations of Royal Air Force contingents working with the Navy, in co-operation with the Belgian offensive, during the period October 6th-12th, have been considerably hampered by unfavourable weather.

Fourteen tons of bombs have been dropped on enemy lines of communication, railway junctions, dumps, etc., and the ports of Ostend, Zeebrugge, and Bruges have been kept under continual observation by aerial reconnaissance.

Enemy activity has been below the normal. Eight enemy machines have been destroyed and four driven down out of control, whilst two of our machines are missing.

Oct. 17th.—Royal Air Force contingents working with the Navy landed in Ostend this morning, and report it clear of the enemy.

Oct. 18th.—The following report has been received from the Vice-Admiral, Dover:—

On the morning of Oct. 17th the military situation between Nieuport and Ostend was obscure; it seemed uncertain whether the enemy had withdrawn from the coast. Up to then no fires had been started by him, either at Middelkerke or Ostend.

A division of destroyers reconnoitred the coast assisted by aircraft. They arrived off Ostend by 11 a.m., at which hour one of our aircraft landed on the beach, where large crowds of inhabitants had assembled.

The King and Queen of the Belgians expressed their wish to visit Ostend either by sea or by air. In view of the difficulty of landing and the uncertainty of the situation, they proceeded in H.M. destroyer "Termagant," flying the Belgian flag at the main, to the vicinity of Ostend.

MILITARY.

G.H.Q. Communiqués.

Oct. 15th, 8.50 p.m.—On Oct. 14th fine weather enabled our squadrons to maintain the greatest activity throughout the day. Much valuable reconnaissance and photographic work was completed and many targets were reported to our artillery. Our bombing machines caused great damage to railway stations and junctions in rear of the enemy's lines; many direct hits were obtained and numerous fires started in railway sheds. Parties of enemy troops and transport were also attacked, and a hangar on an enemy aerodrome was set on fire. In all 33 tons of bombs were dropped by us.

German aeroplanes showed intense activity on the northern battle front, and heavy fighting ensued. Thirty enemy machines were destroyed and six driven down out of control. In addition one enemy machine was shot down by our anti-aircraft guns and one by machine-gun fire from our infantry. One German balloon was shot down in flames.

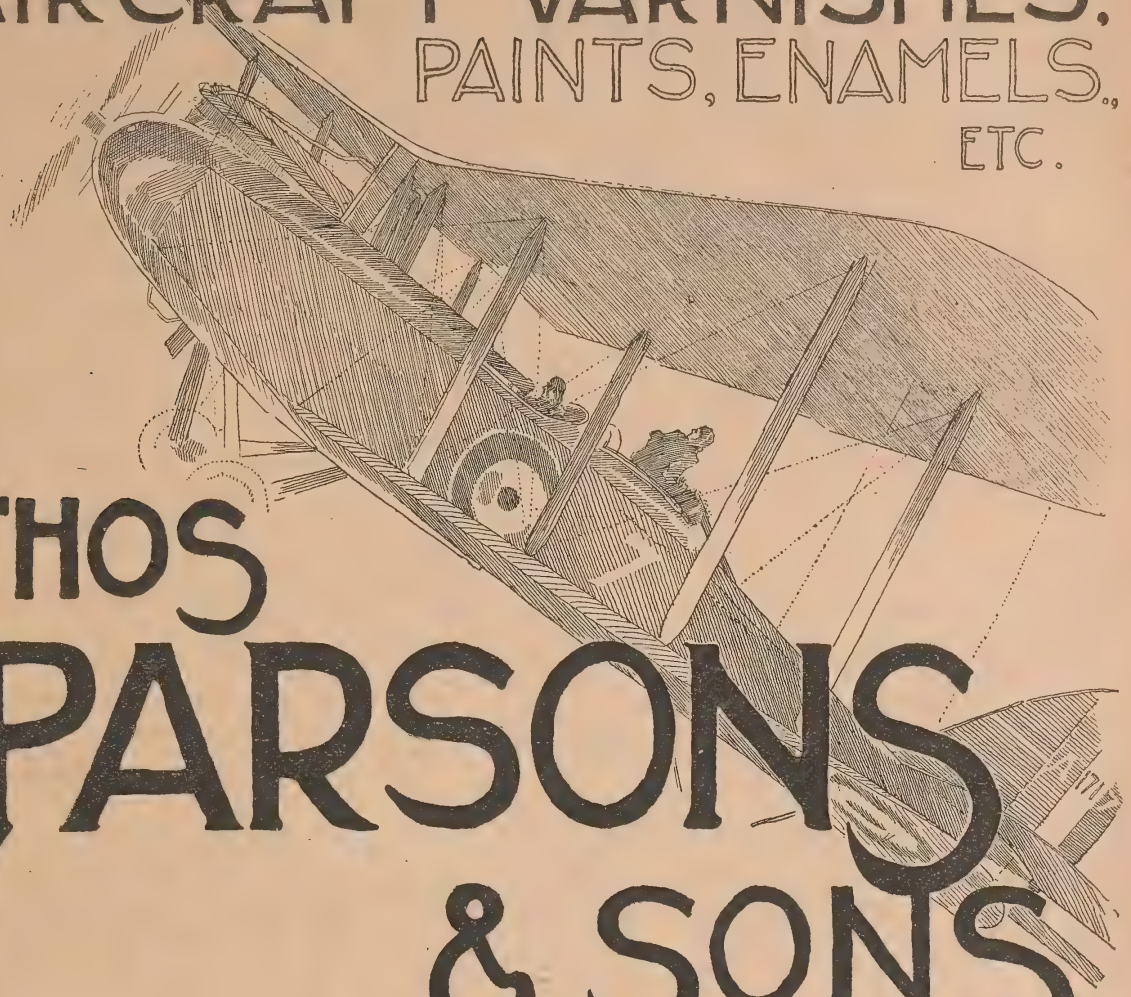
Eleven of our machines are missing.

After dark our night-flying squadrons continued to attack railway junctions with good effect, dropping over 13 tons of bombs.

Oct. 16th, 8.10 p.m.—On the 15th inst., in spite of very unfavourable weather conditions, our squadrons continued their activity over the battle front. Close co-operation was maintained with our infantry

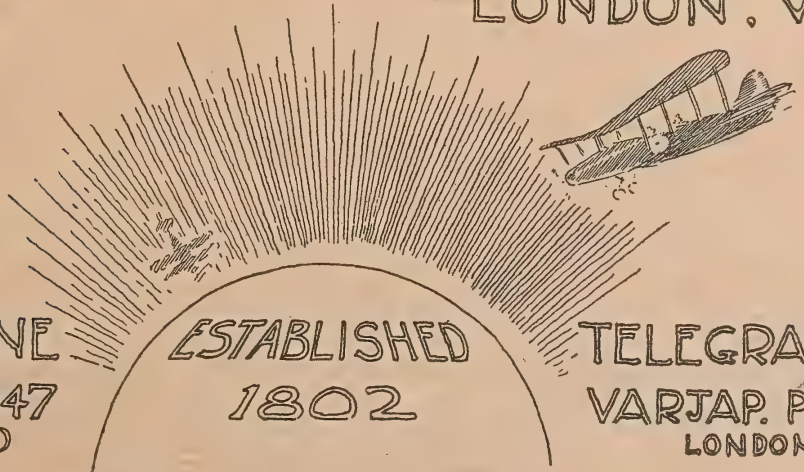
(*Continued on page 1527.*)

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THE BREGUET AND SALMSON BIPLANES.

(Translated by a Neutral Contributor.)

In a German technical journal, the automobile and aero-technical paper "Der Motorwagen," an extensive description of the Bréguet 14 B2 biplane, with 300 h.p. Renault engine, is to be found in the issues of July 30th and Aug. 10th.

The Wings.

This biplane, characterised by two set of struts, is produced almost exclusively of aluminium, and is intended for bombing purposes. The upper planes have a backwards stagger of 0.21 m. and a span of 14.4 m., and are mounted on a cabane frame, while the lower planes have a span of 13.77 m.

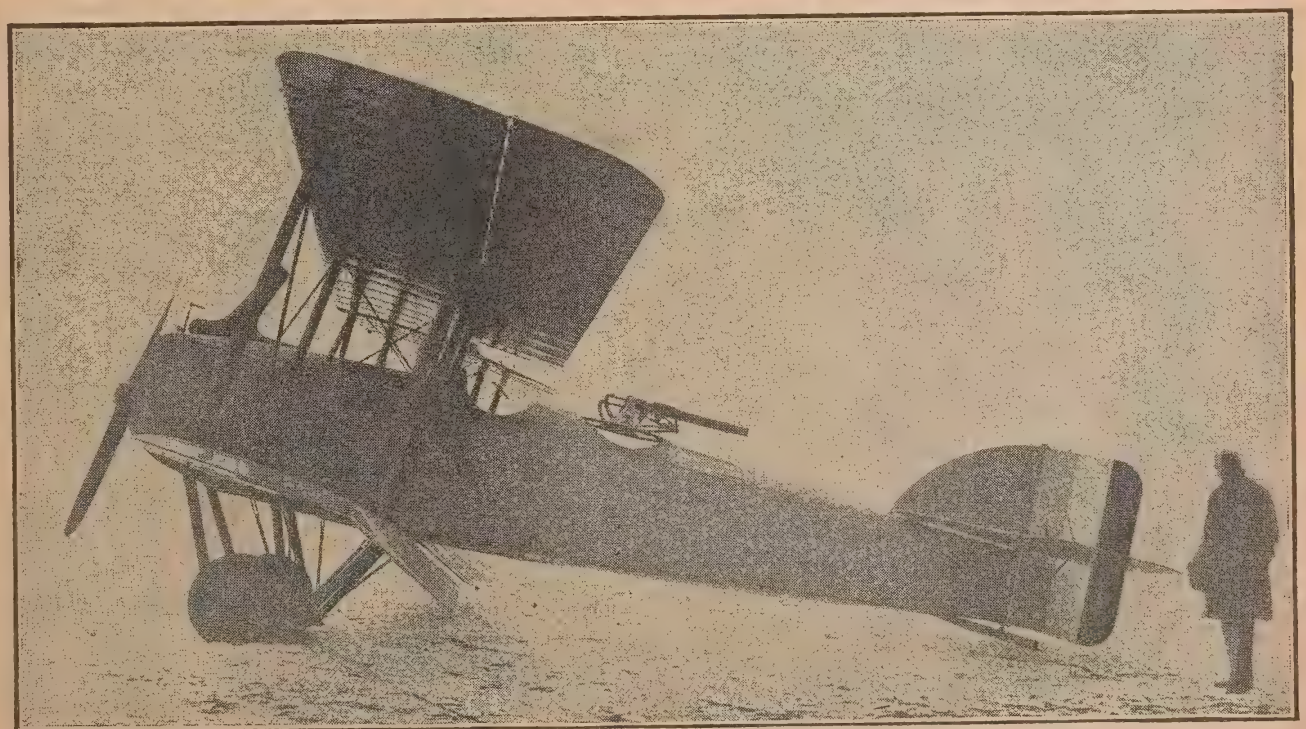
Both upper and lower planes have large cuttings at the fuselage and their arrow shape amounts to 175 deg. The angle of incidence of the upper planes is 4.5 deg. in the middle and 2.5 deg. at the ends, that of the lower ones decreasing from 3 deg. to 2 deg.

The spars of both planes are drawn aluminium tubes of rectangular section 65.6 x 34.6 mm. The thickness of the walls of these tubes amounts in the inner section of the upper plane to 2.6 mm., elsewhere to 1.6 mm. The rear spar grows thinner towards the wing tips till the thickness of the edge, where auxiliary spars with ash bands of 6 mm. thickness and 3 mm. three plywood glued to both sides are provided. At the points of juncture and at the ends of the stampings the spars are strengthened by ash pieces, in some instances of I shape. A socket of 20 cm. length, made of welded sheet steel of a thickness of 1.5 mm., is provided at the strut ends of the upper planes and at the strut bases. These sockets and the wooden linings are held in position by iron tube rivets.

The main spar of the upper plane is strengthened in the interior section of a pine support of a thickness of 10 mm. being fixed to one side of the spar by means of small brass screws. The spars of the upper planes are equipped with compression supports at the joints of the two sets of struts and the lower planes for the outer strut set, the support being an aluminium tube of the diameters 30 and 27 mm. exterior and interior. Further there are two aluminium ribs of a width of 40 mm., one at the beginning of the ailerons and one by the bomb store in the lower plane. The interior wiring consists of single wire.

The ribs are very strong. They have a depth of 2 mm. above, of 1.9 below. A web provided with weight diminishing holes is glued between the longitudinals of three-ply wood, 3 mm. thick. On both sides of the spars as well as at five points between them the flange is strengthened by glued and nailed birch laths and wrapped bands. The ribs are arranged loosely on the spars. The ribs lie parallel to the axis of longitude, forming in relation to the spars an angle corresponding with the arrow shape. They are connected with each other by means of the veneer planking, reaching on the upper side from the leading edge to the main spar, as well as by the leading and trailing edges. Further they are connected by two bands, lying behind each other and alternately wound from above and below the ribs. The distance between them amounts to 40 mm. Forward and in front of the rear spar more 4 mm. thick auxiliary ribs of plywood are arranged. To reinforce the aerofoil, thin birch ribs reaching to the trailing edge are screwed to the rear of the ribs on the underside.

The yellow-white coloured fabric is sewed to the ribs and secured with thin nailed strips where exposed to the airscrew draught. The provision of hooks and eyes on the under side



The Breguet Bomber with 300-h.p. Renault Engine. *(From a French Photograph.)*

of the planes behind the leading edge and in front of the trailing edge is to permit the draining off of moisture.

Only the upper planes are provided with ailerons, attached direct to the rear spar.

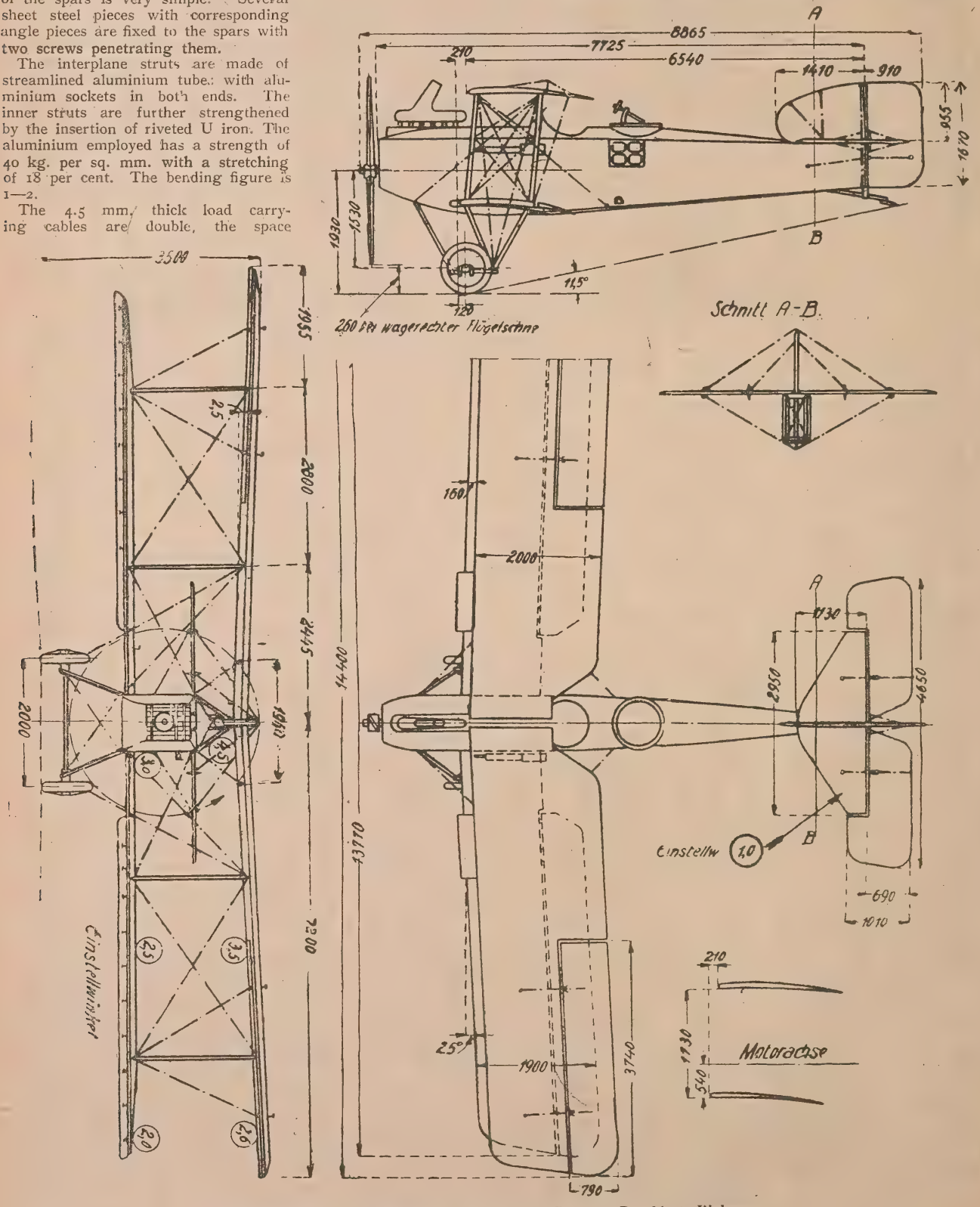
The part of the lower plane lying behind the rear spar is hinged along its total length and is pulled downwards by means of 12 rubber cords fixed on the under side of the ribs, the tension of these can be adjusted by means of screws, an automatic change of the aerofoil corresponding with the load and speed thus results with an easier control of the aeroplane with and without a load of bombs. The stampings for the hinges of the ailerons and the flexible lower plane pieces embrace the spars and are connected with them by means of bolts passing right through. The spars have no linings at these points.

The construction of the stampings of the spars is very simple. Several sheet steel pieces with corresponding angle pieces are fixed to the spars with two screws penetrating them.

The interplane struts are made of streamlined aluminium tube, with aluminium sockets in both ends. The inner struts are further strengthened by the insertion of riveted U iron. The aluminium employed has a strength of 40 kg. per sq. mm. with a stretching of 18 per cent. The bending figure is 1—2.

The 4.5 mm. thick load carrying cables are double, the space between them being filled by a wooden lath. In the same manner the landing wires as well as those crossing from the upper planes forward and backwards of the fuselage are arranged, being wires of a thickness of 2½ mm. that are connected with the stampings and the turnbuckles in a primitive way by means of eyes and spiral wire pushed over. To give a better support to the lower planes, being much stressed by the bomb store, the load-carrying cables are in the inner section led to the stampings on the main ribs arranged by the bomb store, and thence downwards to the landing gear. The rear spar of the upper planes is also provided with a cable to the fuselage between the cabane and strut.

The stampings for the fixing of the wiring is constructed very simply. A bent sheet metal of U form and with drilled holes for the bolts carries the nipples of the eyebolts.



Side and Front Elevation and Plan of the Briguet Bombing Biplane.

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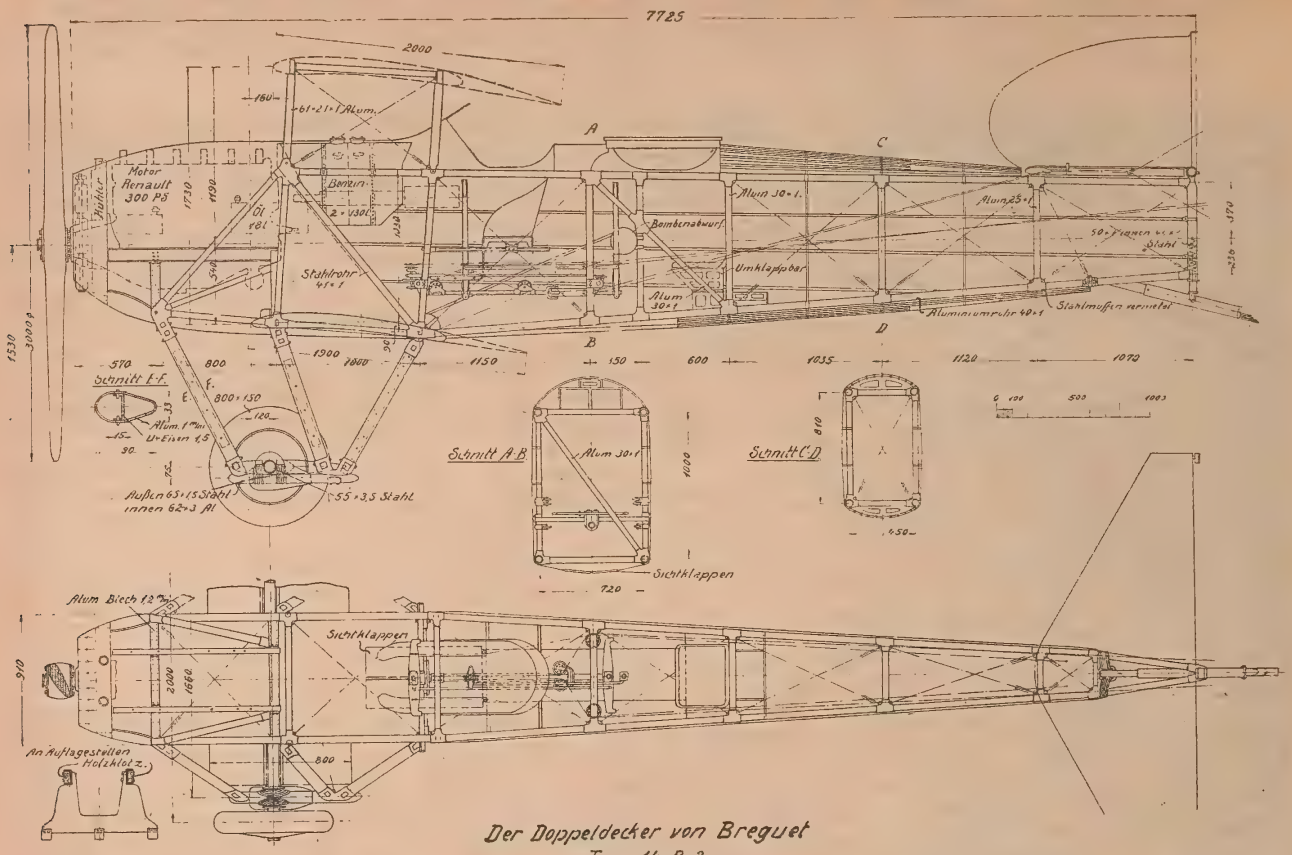
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Sectional Plan and Side Elevation of the Fuselage of the Breguet Biplane.

The Fuselage.

The canvas-covered body consists almost exclusively of aluminium tubes that are riveted with welded steel tube sleeves and spanned with wire. Only at specially stressed points in the front part have steel tubes been employed. The upper and lower sides of the fuselage are rounded by the employment of fairings.

The engine rests on aluminium U bearers that are supported by riveted aluminium struts. Two pairs of large view traps are provided below the seats of the pilot and observer, and are operated by cable by the observer.

The Undercarriage.

The very strong landing gear has three pairs of struts of aluminium streamline tubes, strengthened by U irons riveted in, and resting below on horizontal steel tubes. The wheel shaft rests in an auxiliary one of steel sheet in U shape welded on. The back root points of the struts are connected by means of a second steel tube auxiliary shaft, welded on, and by a tension band lying behind. A diagonal wiring is further provided horizontally in the auxiliary shaft level. The streamlining of the shafts is cut out in the middle behind the front auxiliary shaft to improve the sight downwards. There is only a diagonal wiring to the fuselage in the level of the middle struts.

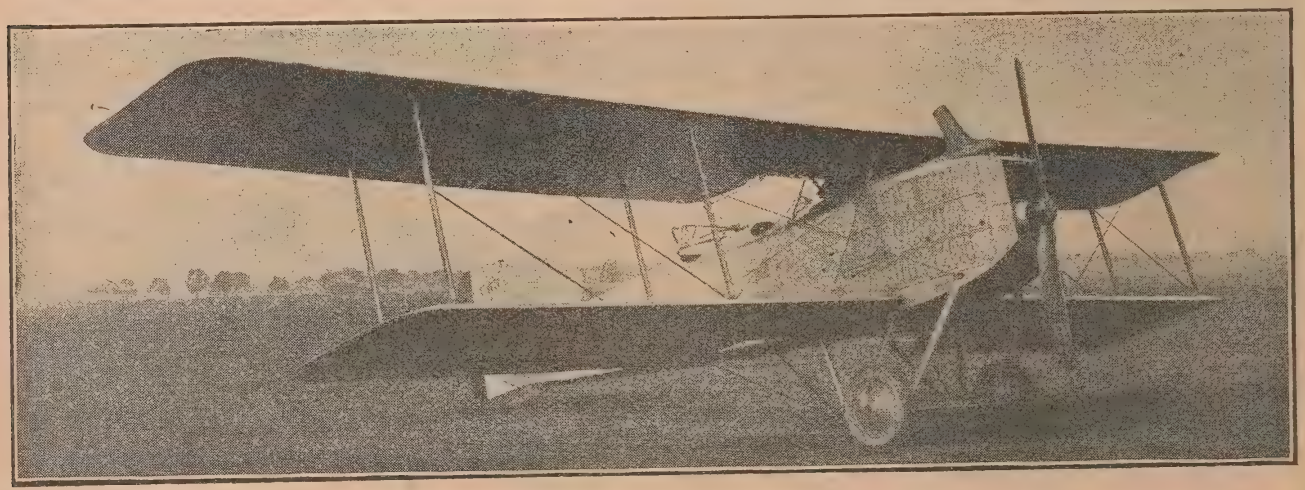
The ash tail skid hangs in rubber springs from the fuselage and is strengthened in the rear end by a covering of a rectangular aluminium tube. Its wire stay is supported in the rear stem by a spiral spring. Leaf springs are further fixed to the end of the skid.

Tail plane, rudder and elevator are of welded thin steel tubes.

The aeroplane is equipped with complete dual control. The control in the observer's cockpit can be removed.

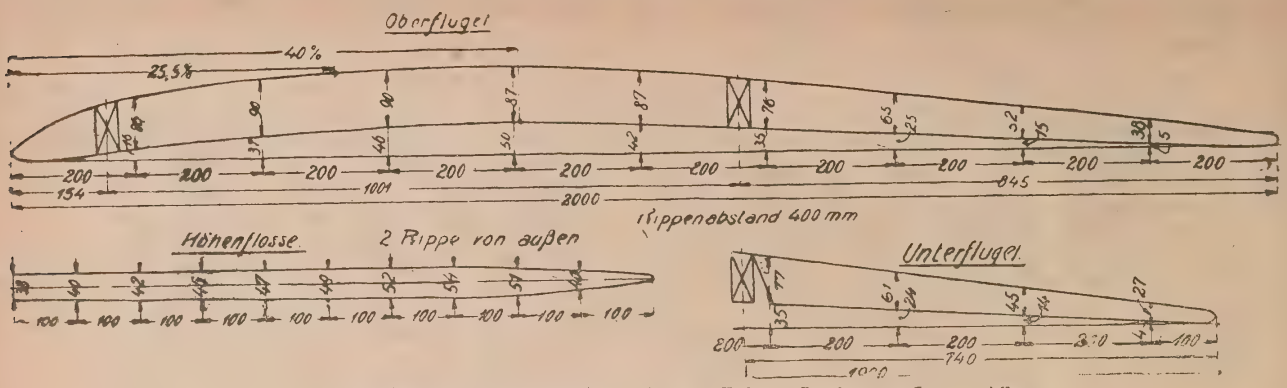
The ailerons are interconnected. The twin control cables run behind the rear spar of the lower planes to two direction changing rollers resting on a shaft. Here they part and are led as separate wires of thickness of 2 mm. to the underside of the aileron. In the upper planes the ailerons are connected by control cables, governing two levers in each side. The ailerons are balanced and welded to a common shaft.

According to a label on the aeroplane the performance of the 12-cylinder Renault engine of V type is 300 h.p. at 1500-1600 normal r.p.m. The engine is the same as the 260 h.p. model, the increase in horse-power being the result of the employment of aluminium pistons and a greater number of revolutions. The engine drives the two-bladed airscrew direct. The exhaust going inwards is led above the upper planes by a collector.



A Three-quarter Front View of the Breguet Bomber. *(From a French Photograph.)*


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The Breguet Wing Section (above). Below—Section of Lower Aileron.

The aluminium radiator forms the front part of the fuselage, and is divided in the middle, each row of cylinders having thus its own cooling system with a separate water-pump

The Petrol System.

Two gravity tanks of 130 litres capacity each are positioned behind the motor. As their underside lies only little above the carburettors an auxiliary tank of 5.6 litres capacity is provided in front of each carburettor behind the engine, the petrol being led on to the tank from the carburettor. These tanks fill themselves by gravity in horizontal or descending flight from the main tanks. Whereas, if the main tank may be unable to supply any more petrol in climbing, the auxiliary ones then feed the carburettor. Check non-return valves are mounted in the piping to prevent the petrol from running back into the main tanks.

As there is by this arrangement a petrol quantity of 11.2 litres in front of the carburettors without any possibility of being cut off, grave accidents may occur by carburettor fires.

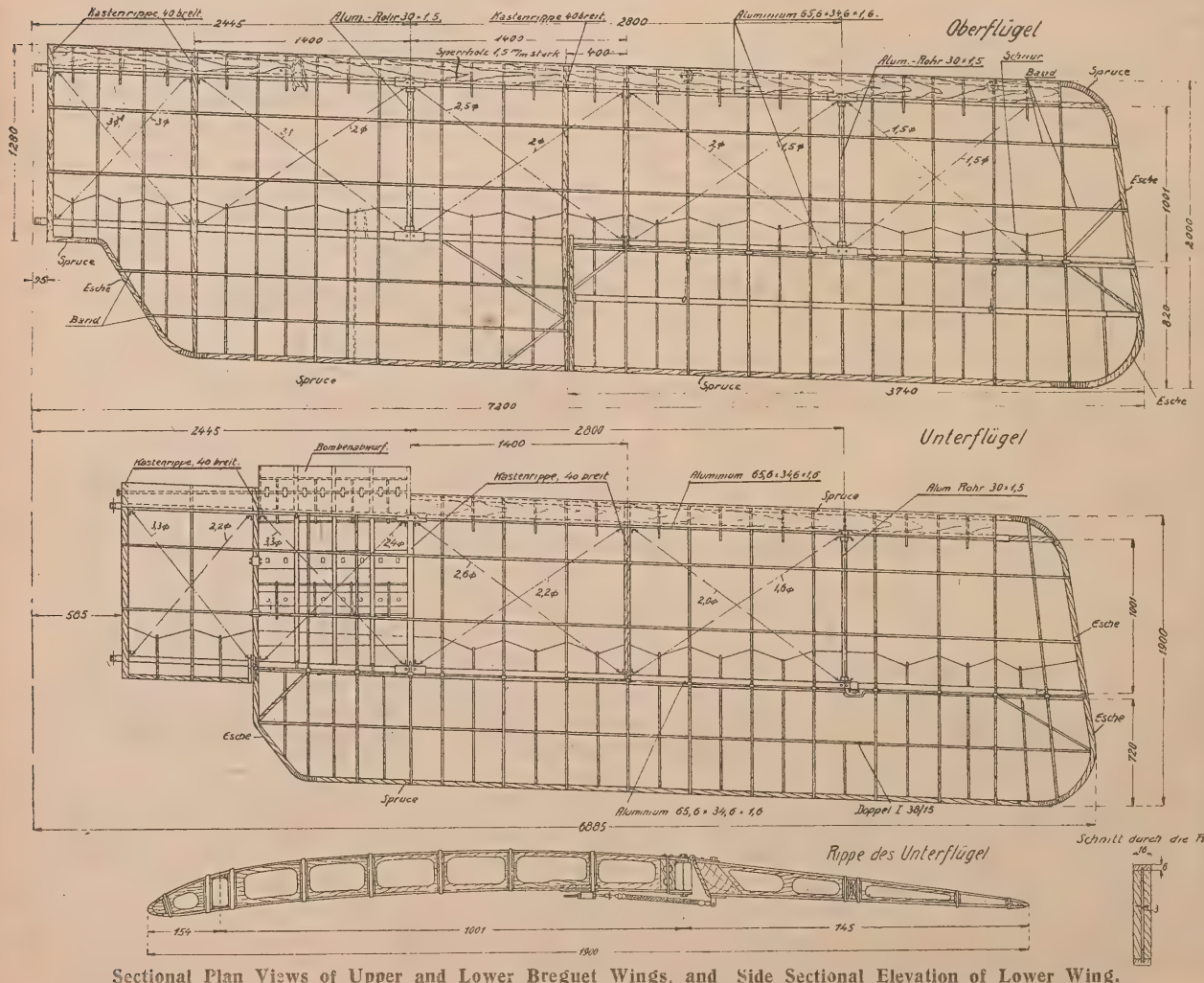
The petrol level in the main tanks is indicated electrically by pressing a contact. A hard rubber tube is mounted in each tank inside a tube and wound with a resistance wire of 0.4 m. thickness, above which a cork float with contacts moves. An oil tank of 18 litres' capacity is mounted on the right side of the engine. The fuel suffices for a flight of about 2½ hours' duration under ground conditions.

The Instruments.

On the instrument board, protected by a large Triplex safety glass, in aluminium framing, is mounted a tachometer, a watch, altimeter, two cooling water thermometers, the pressure buttons and the indicator arrangement of the petrol height with the dry cell battery lying behind, and the compass. To right of the pilot is to be found the manipulation of the radiator-blinding arrangement, the starting magneto, the petrol start spray pump, oil and petrol stop-cocks, as well as the connections for the illumination for night flying and for wireless. To left are the levers for the gas throttle, the spark-timing, the regulation of extra air supply, the magneto switch, as well as a petrol stop-cock.

The observer's cockpit is arranged in the middle of the turning

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Sectional Plan Views of Upper and Lower Breguet Wings, and Side Sectional Elevation of Lower Wing.

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and raising machine-gun ring mounted on the top of the body. The seat is hinged so that the observer may sit either high or low on the bottom of the fuselage. The mounting of Cellon windows in both sides gives him an outside view. The bottom is of steel tube girder work, the sight being thus unhindered downwards when the sight-trap is opened by means of the cables arranged to right of the seat. On the right fuselage wall the bomb dropping mechanism is mounted; to left levers connected with the gas lever and magneto switch in the pilot's cockpit. To both sides are connections for wireless.

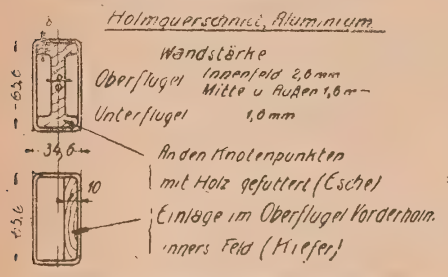


Diagram showing Timber reinforcement of Aluminium Main Spar.

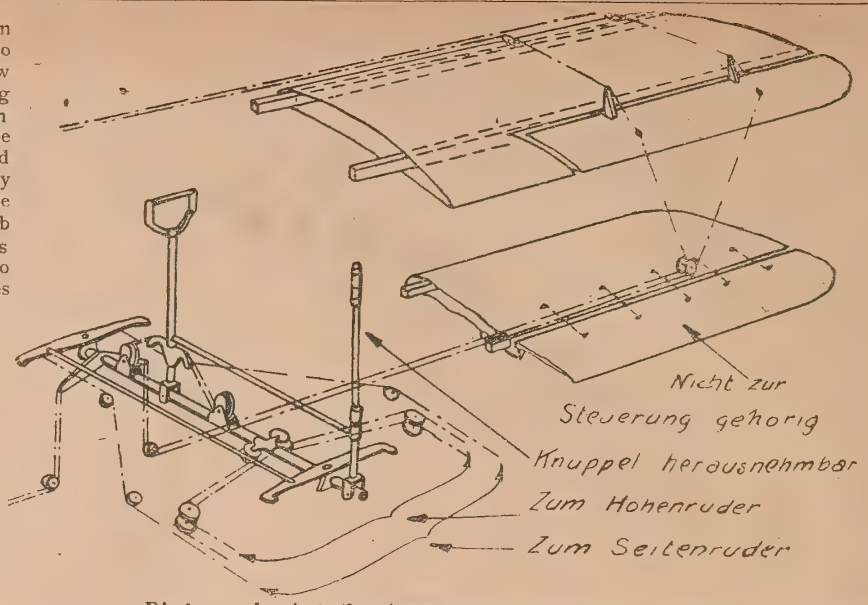
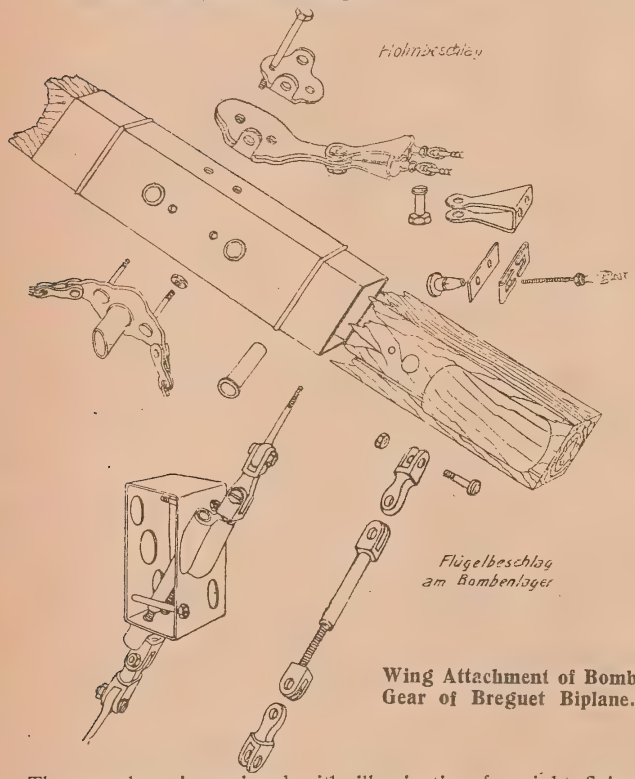


Diagram showing the Arrangement of the Dual Controls in the Breguet Biplane.



Wing Attachment of Bomb Gear of Breguet Biplane.

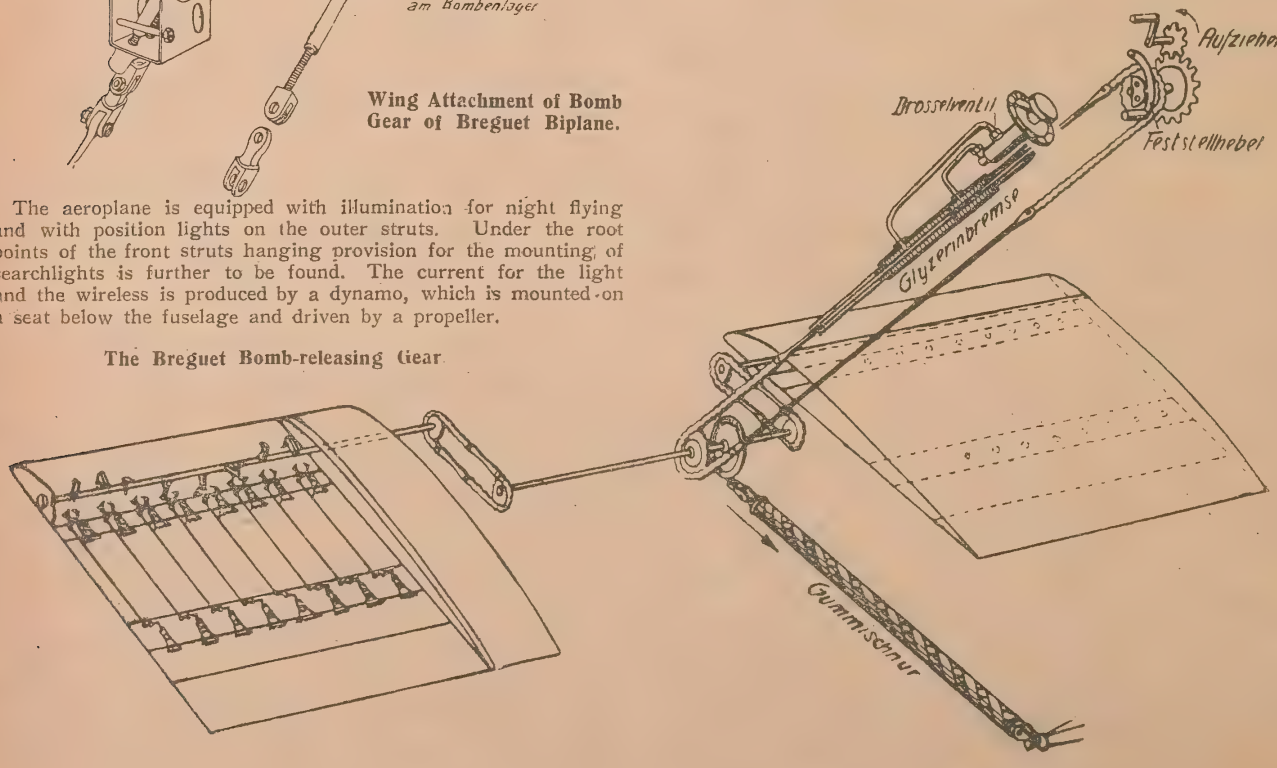
The aeroplane is equipped with illumination for night flying and with position lights on the outer struts. Under the root points of the front struts hanging provision for the mounting of searchlights is further to be found. The current for the light and the wireless is produced by a dynamo, which is mounted on a seat below the fuselage and driven by a propeller.

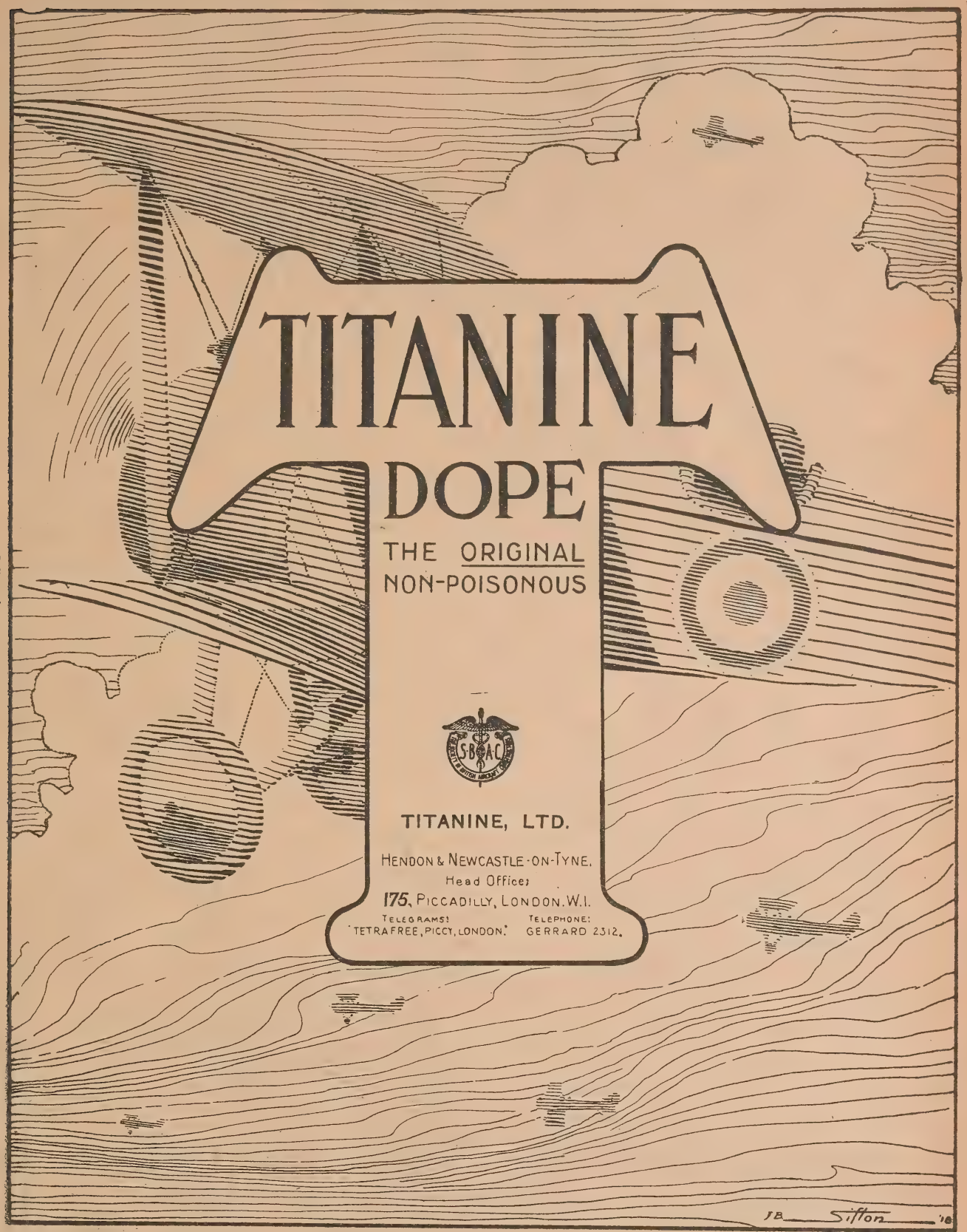
To left on the outside of the body a fixed machine-gun for the pilot is mounted, being operated from the camshaft of the left row of cylinders.

The observer is armed with two machine-guns clutched together and mounted on a raising and turning ring. As the ring is mounted high, the firing range forward is good.

The bomb store is mounted in the inner section of the power planes with a capacity of 16 small bombs, arranged hanging in two rows of eight. In the dropping operation the two bombs, lying behind each other, are released, at the same time, by a camshaft lying in front of the main spar. The camshafts are connected by chain drive with a shaft in cross position in the fuselage with a grooved pulley mounted, driven by a strong rubber cable. Another chain drive connects this shaft with a gear wheel mounted to right of the seat of the observer, on the shaft of which a locking quadrant as well as a transmission gear for the stretching of the rubber chord is keyed on. To load the bomb store the chain wheel is first by means of the crank-handle in the observer's cockpit turned till the locking engages again after revolution. When the rubber cord is thus much stretched the bombs are hung in. When the upper gear wheel is now released by pulling the locking lever for bomb-dropping, the stretched rubber cord starts turning the shaft lying across in the fuselage as well as

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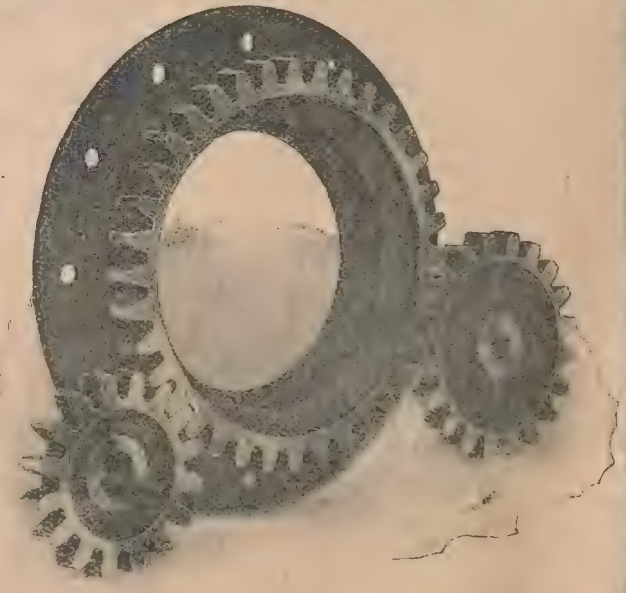
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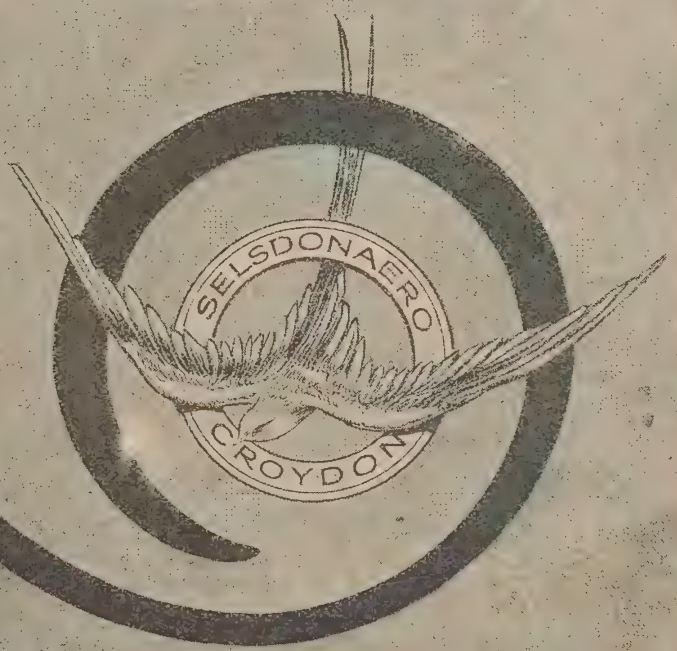
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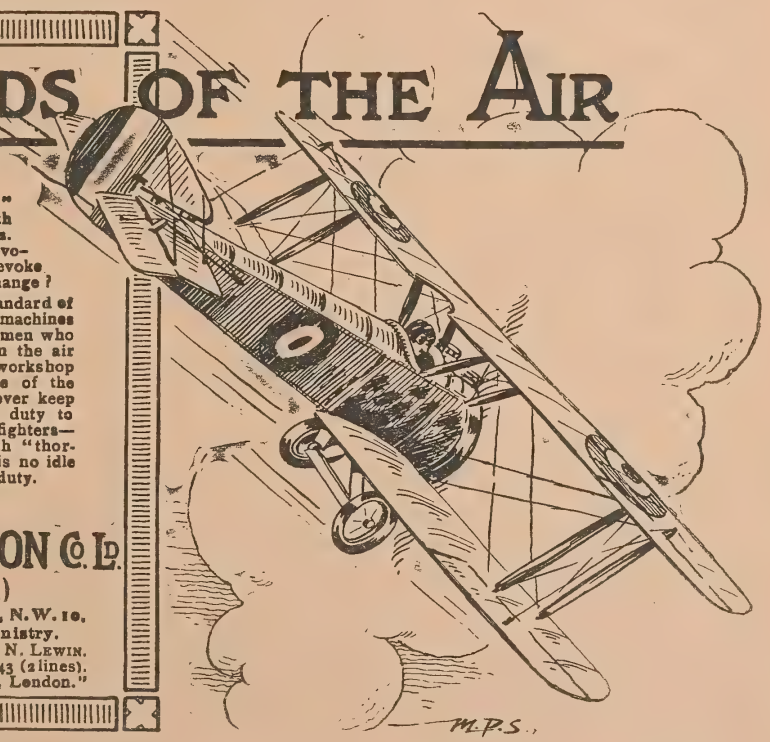
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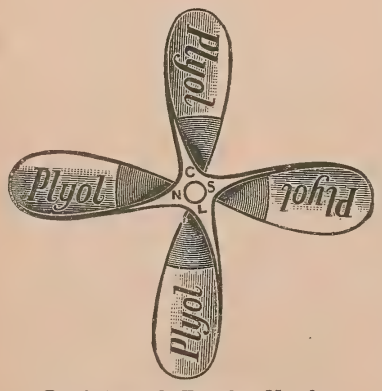
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Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 703.

Hollow Spars—
McGruer Rentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6242.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.

Metal Parts and Fittings (continued)
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Propellers (continued)—
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129

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The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth.

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Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

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Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
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Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London. N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles—
Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent" Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45." Wimbledon 43 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.
Avenue. 1432.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd, The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London" Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

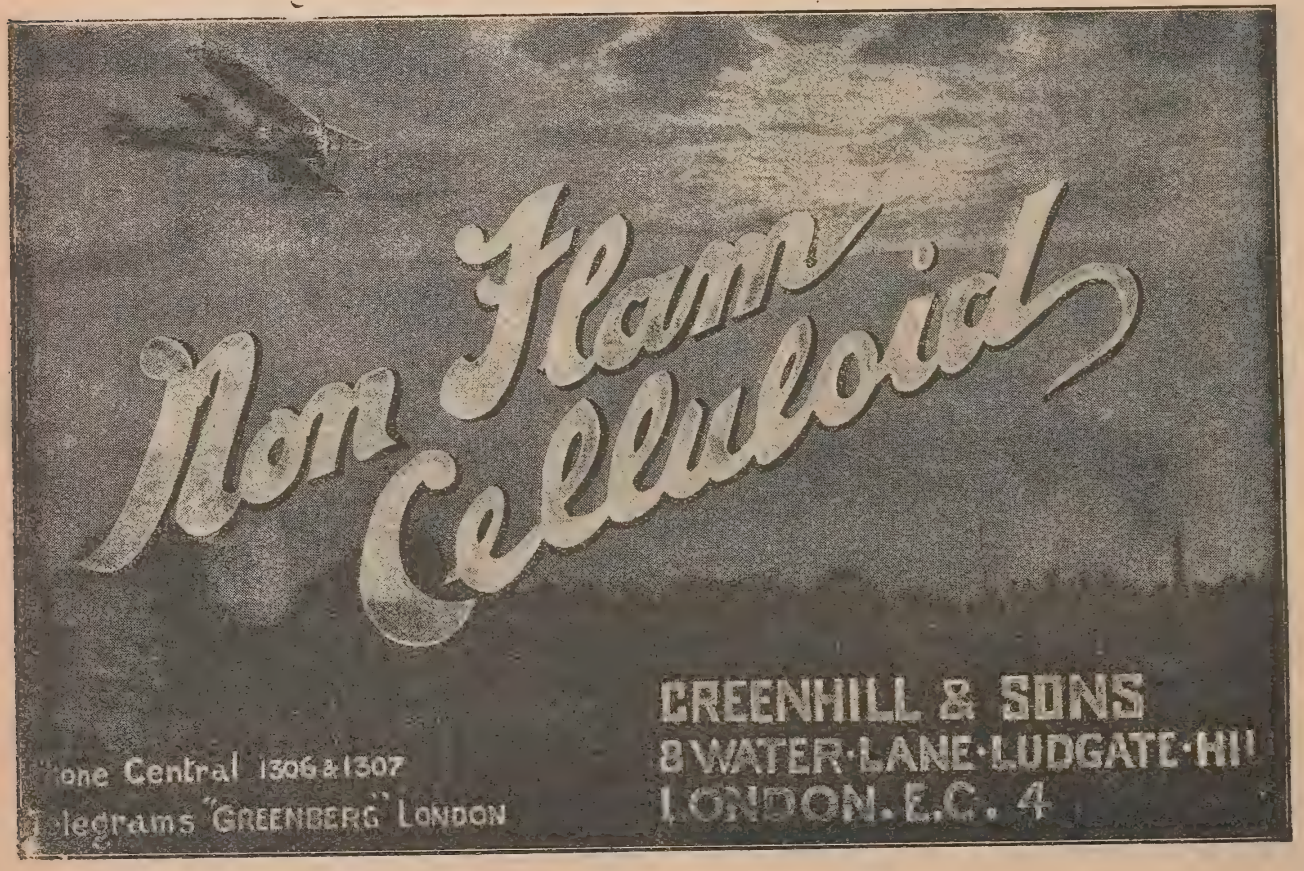
Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

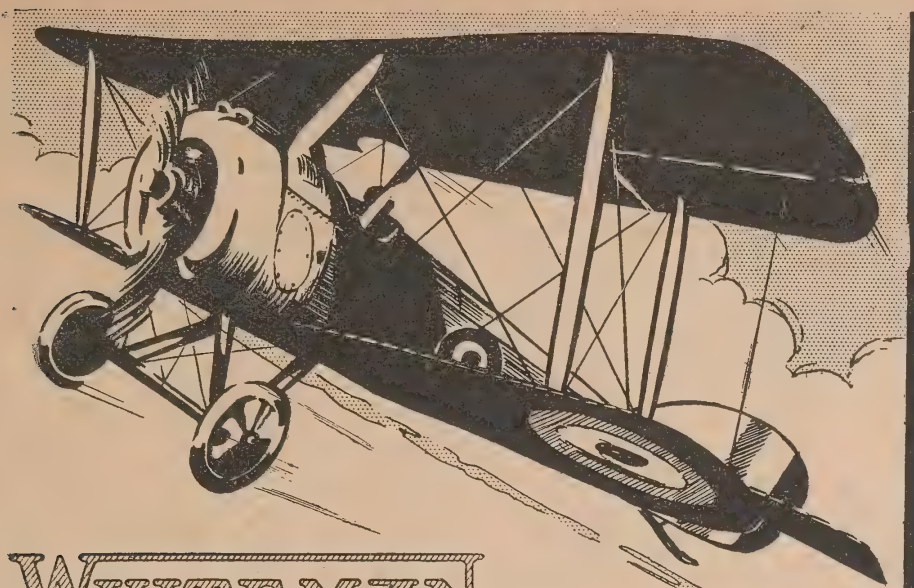
Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London" London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester" Leicester 3614





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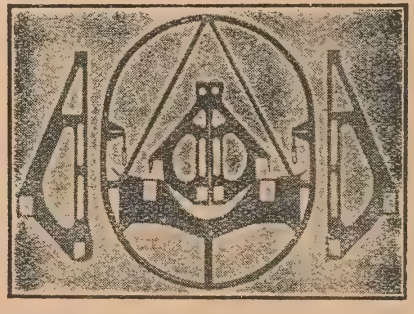
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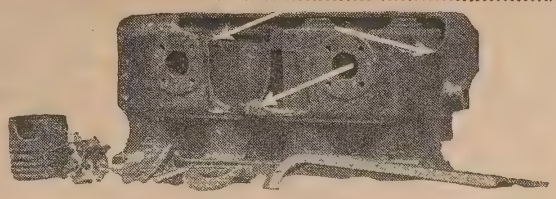
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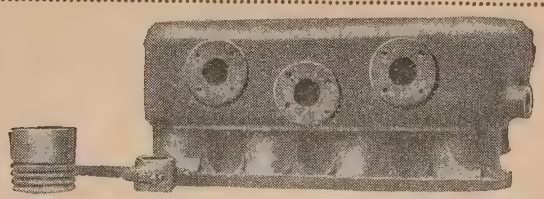
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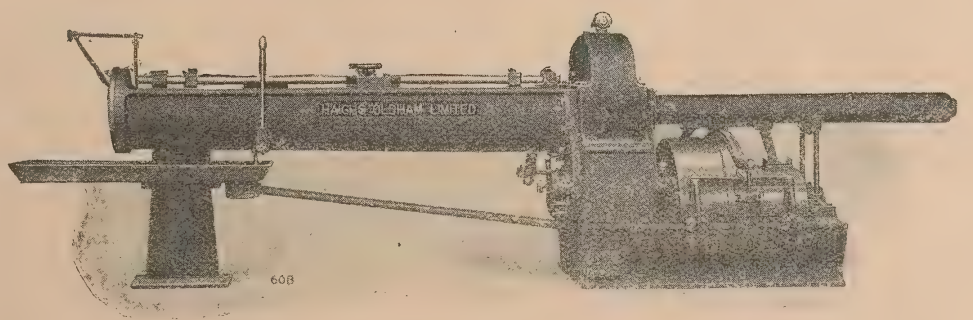
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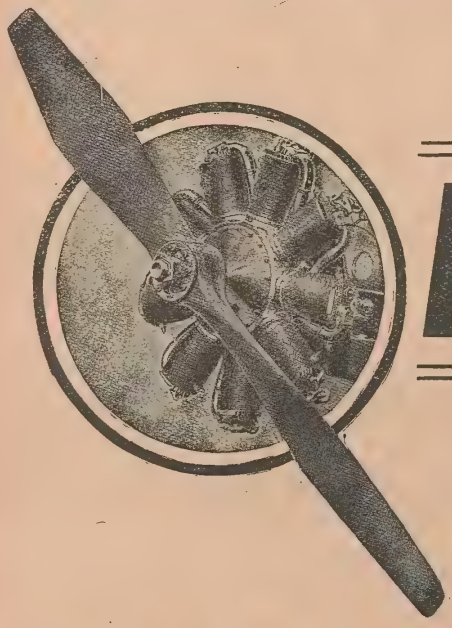
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the camshafts of the bomb stores, so that all bombs are released by one revolution. To enable a timing of the bomb-dropping a glycerine brake cylinder, with adjustable throttle valve, is mounted in the chain drive leading upwards. Being connected with the inner bomb pairs and fixed to both sides of the seat two special cables make the dropping of these four bombs possible independently of the rest.

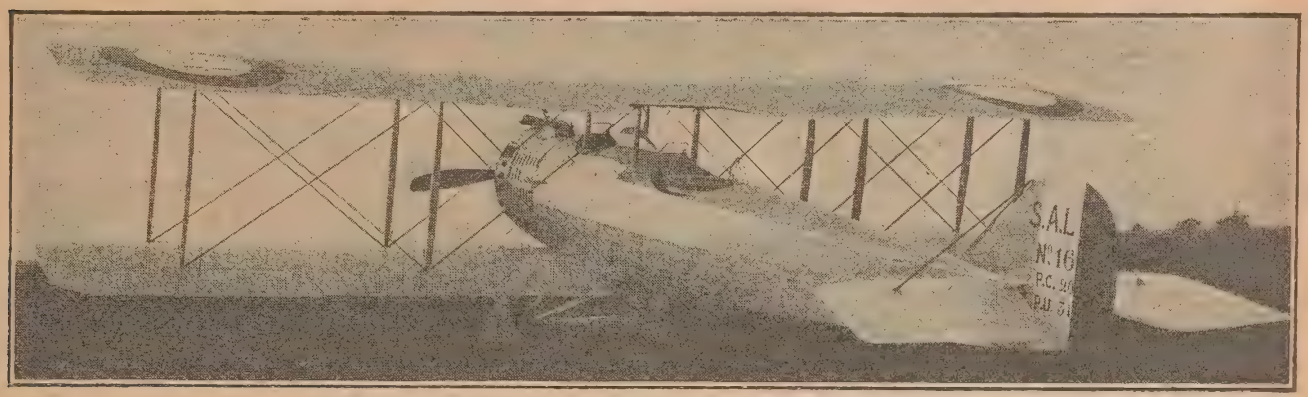
One aeroplane has further had a hanging provision for two large bombs mounted inside the cockpit to right of the seat of the pilot. The cables run to the observer.

The aiming arrangement is mounted inside the observer's cockpit on a swivelling arm on the left body side.

The empty weight of the aeroplane was fixed at 1,215 kg. A notice on the rudder gives the weight of the fuel at 216 kg., that of the normal useful load to 514 kg. and the maximum useful load at 614 kg. Reckoning with the normal load the total weight of the aeroplane loaded is thus 1,915 kg., corresponding with a load on the planes of 40 kg. per sq. m., as well as a performance load of 300 h.p. of 6½ kg. per h.p.

Characteristic Features.

Beside the usual backwards stagger to be found on other aeroplanes the following features should be emphasised; the high fuselage with the right-angled rudder and forward sharp rounded keel fin, the landing gear with three pairs of struts and a right-angled cutting of the streamlining of the shafts, the small arrow-shape of the trapeze-shaped planes with the sharp and large cuttings, the bomb stores projecting forwards in front of the planes, the triangular-fixed tail plane, the divided elevator, with cornered balance, as well as the dihedral upper planes and horizontal lower ones.



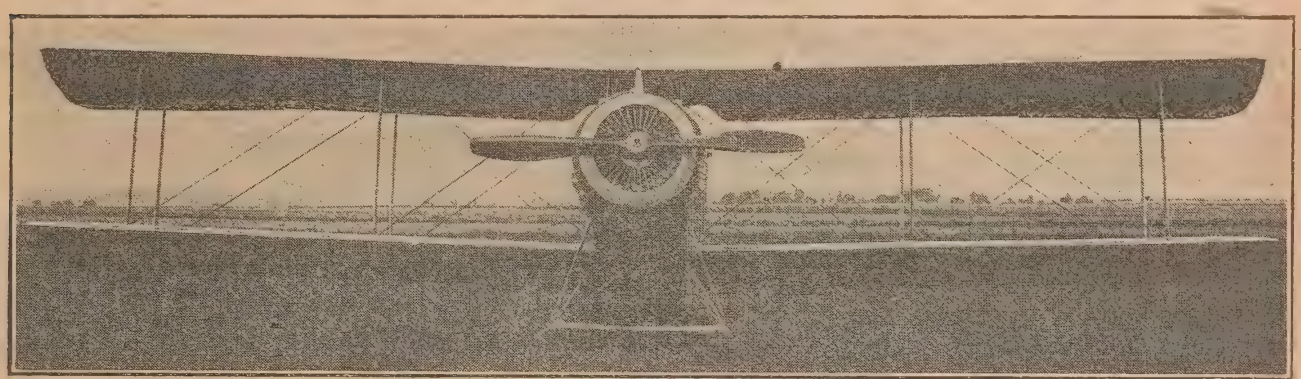
Three-quarter Rear View of the Salmson-Canton-Unné Biplane. *(From a French Photograph.)*

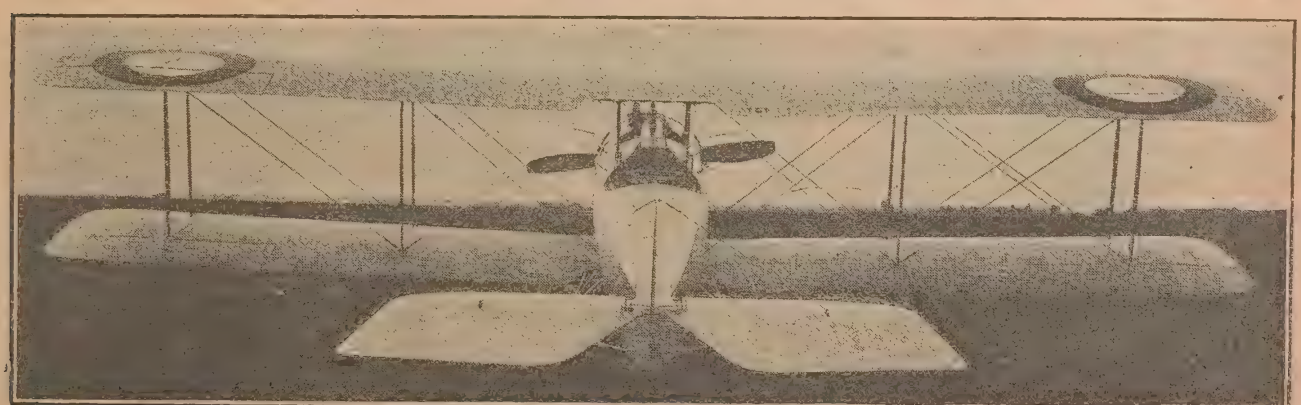
A SALMSON ENGINED BIPLANE.

"Flugsport," in its issue of Aug. 14th, has further the following report on a French reconnaissance biplane with a 250 h.p. stationary Salmson, being an interesting reappearance after some years' disappearance as favourite power plant, and evidently a choice of the designers on their look out for an increase of horse-power beyond the capacity—at any rate at present—of the rotary motor, when they have a pleasant short length to consider for longitudinal mounting, and as the illustrations bear witness neatly overcoming the drawback of front resistance by an effective corresponding streamlining of the biplane.

The German notes on this biplane, the rudder of which is marked A.L.2 A2 No. 5063, read as follows: "On this aeroplane, captured undamaged, the Salmson engine that had got into mis-credit is again employed. Hitherto the French had used the Salmson as engine with propeller. The lack of high-powered motors appears to have forced them to employ again this motor, being in reality no bad one, in spite of the large front area. The cooling air is regulated by means of a vertical star formed and vertical arranged blinding arrangement. The exhaust tubes of drop-shaped section will be seen to project to both sides of the cowl. Thanks to the short-built, water-cooled star motor the seat of the pilot could be arranged well forward, the pilot having thus an excellent range of sight forwards and upwards under the leading edge of the upper planes, while the field sight upwards behind is much limited.

A Vickers machine-gun is mounted fixed in front of the pilot's cockpit on the engine, and in the cockpit of the observer a twin-barrelled machine-gun as well as the provision for wireless is to be found.





Front and Rear Views of the 300-h.p. Salmson Biplane. *(From French Photographs.)*

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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records :—

Patents Applications.

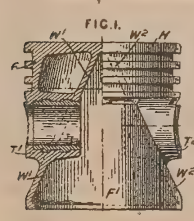
Adams, J. J. Device for indicating angle of inclination of aircraft. No. 16613. Oct. 11th.
Baker, F. Automatic parachute lever. No. 16245. Oct. 7th.
Barr and Stroud. Range-finders and height finders. No. 16444. Oct. 12th.
Bates, G. Means for propulsion of aircraft. No. 16283. Oct. 7th.
Beardmore, Sir W. Flying-machines. No. 16514. Oct. 10th.
Bloomer, F. Aeroplane struts. No. 16569. Oct 11th.
Bryer, G. M. Device for synchronising or regulating aero engines, etc. No. 16276. Oct. 7th.
Davies, G. E. Parachute. No. 16295. Oct. 7th
Duncan, B. A. Construction of girder-like parts of aeroplanes and airships. No. 16259. Oct. 7th.
Dutton, F. O. Safety device or appliance for aircraft. No. 16500. Oct. 10th.
Fagan, J. H. Device for protection of flying-machines. No. 1663. Oct. 12th.
Fluder, M. A. Mechanical flight. No. 16447. Oct 9th.
Hanson, A. Aeroplane-angle indicator. No. 16489. Oct. 10th.
Haydon, B. A. P. Ejecting and releasing parachutes from aeroplanes. No. 16637. Oct. 12th.
Hudson, C. F. Mounting for wireless keyboard on aircraft. No. 16248. Oct. 7th.
Lange, F. M. T. Means for application of dopes, paint, etc. No. 16321. Oct. 7th.
Mooney, D. J. Aeronautical machines constructed of metal. No. 16507. Oct. 10th.
Motte, R. C. Sheet-metal bodies, fuselages, or hulls for aircraft, boats, floats, etc. No. 16475. Oct. 10th.
Nicholas, A. W. Aerial reverse-propeller gear. No. 16474. Oct. 10th.
Nieuport and General Aircraft Co. Aeroplanes No. 16435. Oct. 9th.
Perress, T. E. L. Seaplanes and flying-boats No. 16384. Oct. 8th.
Power, R. F. Means for controlling aircraft. No 16520. Oct. 10.
Roe, A. V. Eyelets for adjustable belts, fabrics, etc. No 16422. Oct. 9th.
Secretan, K. Wind resistance and balance-gear for gun-mountings in aircraft. No. 16616. Oct. 11th.
Sopwith Aviation Co. Aeroplane seats, etc. No. 16521. Oct. 10th.
Tebaldi, A. Hydroplanes. No. 16614. Oct. 11th.
Thomas, W. S. Aeroplanes. No. 16421. Oct. 9th.
Unthank, G. R. Machine for testing and finding dynamic balance of airscrews, etc. No. 16495. Oct. 10th
Verner, J. F. Aeroplane controls. No. 16392. Oct. 8th.
Webber, W. J. Ground-indicator for aeroplanes No. 16341. Oct. 8th.
Wells, R. F. Aeroplanes. No. 16635. Oct. 12th
Westway, J. Reflectors for aircraft lamps. No. 16309. Oct. 7th.
Williamson, C. M. Photographic cameras for aircraft No. 16540. Oct. 10th.
Wylie, H. N. Means of connecting aircraft members No. 16369. Oct. 8th.

Complete Specificaton Accepted, Prints of which can be Obtained on and after Oct. 31st, 1918.

119,487. July 17th, 1917. Roe, A. V. Propellers

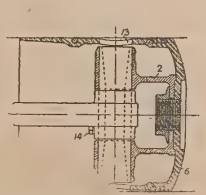
Abridgments of recently Published Specifications.

118,142. Pistons. Roesch, G., and Talbot, C., Ltd., Barlby Road, Ladbroke Grove, London.



In a trunk piston, the gudgeon bearings T^1, T^2 are carried by inclined webs W^1, W^2, and are also united to the dependent flange F of the head H which carries the packing rings. The webs W^1, W^2 are united to the head H, and their edges are connected below the flange F by an extension F^1 of the flange. A short cylindrical extension below the extremities of the webs W^1, W^2 may carry additional packing.

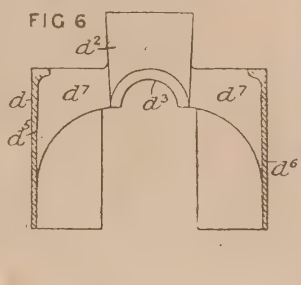
118,342. Pistons, connecting rods. Hagens, H., 31, Cumberland Park, Willesden Junction, London.



The piston 6 of an internal-combustion engine is made of aluminium and has bolted to its head a steel support 2 which carries the gudgeon-pin. The pin is inserted through apertures 13, and is secured by a set-screw 14.

118,322. Pistons, connecting-rods. Burnand, J., 103, Cambridge Road, Teddington, Middlesex.

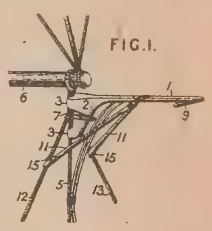
A piston comprises a head *a*, Fig. 1, which may be of aluminium, and a cast-iron skirt *d*, shown also in Fig. 6, which consists of two segmental portions d^5, d^6 connected by flexible webs



d^7 to a hollow central boss d^2. The latter forms a support for the piston crown and has a bearing d^3 for the connecting-rod end, which is secured by caps *u*, *v* to bearings a^2, a^3 on the head *a* in line with the bearing d^3. Semicircular plates *s*, *t* secured by a semicircular ring *o* facilitate the conduction of heat and protect the interior of the piston from oil.

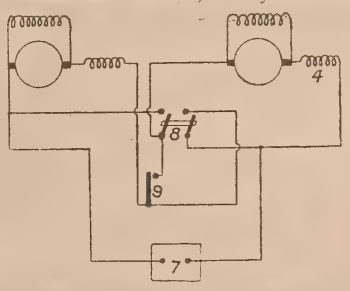
118,352. Pitot-tube apparatus. Brewer, G., 33, Chancery Lane, London, and Spencer, M. H., Roehampton, Surrey.

In order to support a Pitot tube outside the influence of the current of air diverted by the wind-screen or car of a kite balloon, the tube 9 is bent as shown and carried by a bar 1 having a downwardly extending member 2 provided with yokes 3 to embrace the vertical car line 5 connected to its supporting bar 6, the bar being secured by rubber loop connections 7. Struts 11 flexibly connected to the bar 1 are connected to the diagonal car lines 12, 13, by yokes and loop connections 15.



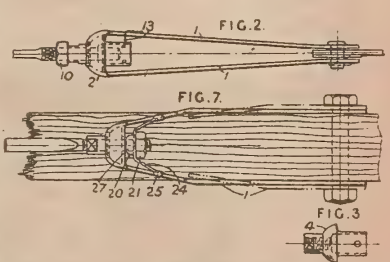
118,221. Electric engine-starting, etc., systems. Bethenod, J., 10, Rue Auber, Paris. Convention date, Aug. 11th, 1917.

In electric engine-starting and lighting system for motor-vehicles and aircraft, a dynamo-electric machine having two armature windings with separate commutators and two series and two shunt field windings, or two compound-wound machines are used, the armature and series field windings being in parallel when working as an engine-starter and in series when used as a generator. A starting-switch 8 places the two elements in parallel for motoring. An automatic cut-in switch 9 closes the circuit to the battery 7, when generating, the series fields 4 then opposing the shunt fields. A mechanical or electrical interlock may be provided between the switches 8, 9. The shunt windings may be replaced by a single winding excited from the battery.



118,240. Wire-strainers. Roe, A. V., High Firs, Bursledon, near Southampton. Addition to 17740/15

In the device described in the parent Specification, the cupped portion 2 of the forked body member 1 and the shoulder 4 of the nut are made partly spherical in shape so as to act as a ball-and-socket joint and allow lateral movement of the stay wire without risk of injury. Locking is effected by a wire 13, as previously described and by a lock-nut 10 carried by the screwed end of the stay wire. Where the stay wire is secured to a spar of the aeroplane, a spring locking-washer is employed having lugs 27, adapted to engage squared faces 20 on the shouldered nut and spring arms 24 provided with lugs 25 to embrace the arms of the forked body member 1. A lock-nut 21 serves to secure the washer to the screwed end of the stay rod which may be provided with flats to lock the washer positively in position.





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COMMERCIAL AERONAUTICS

COLONIAL DEVELOPMENT.

By Medway.

While I suppose we may expect early publication of the Report of the Civil Aerial Transport Committee, I must confess to a state of blissful ignorance as to how far that Committee may be empowered to put into practice any of its own suggestions. Is it, like most such Committees, merely entitled to make recommendations, and, if so, to whom are these recommendations really addressed?

Is there any particular branch of any particular Government Department that is actually charged with the duty of trying to get something done? If not, is there any particular reason why any department should not exercise a little initiative on its own account? So far as I know, there is none, and on this assumption I should like to make a suggestion to the Secretary of State for the Colonies, primarily for reference to the Crown Agents.

It has often been pointed out here that some of the best openings for aerial services will be found in comparatively undeveloped countries. Presumably, the administrators of Crown Colonies and Protectorates have a pretty good idea as to the handicaps under which they labour owing to deficiency of communications. I suggest, then, that a series of inquiries should be addressed to suitable officials in each Crown Colony and Protectorate. The character of the main inquiry would be substantially as follows :—

"Portions of the regions under your control are undeveloped because suitable means of communication with the coast or with more populous regions does not exist. You have, or may have, certain roads and railways, but the network formed by these is not complete. It is probable that many of the gaps could be filled in by the institution of aerial services. You are therefore requested to send in a statement as to the routes along which such services might conceivably be operated to advantage in the district under your control."

Possible Improvements

Suggestions would follow naturally under two headings.

1. Openings for temporary aerial services along routes in connection with which the establishment of road or rail communication has already been proposed or agreed, but where the completion of rail or road cannot be arranged without considerable delay.

2. Routes along which the estimated traffic will not for some time be sufficient to justify a road or railway, but where valuable development on a small scale might be brought about if some rapid means of communication were installed on a more or less permanent basis.

An inquiry of this kind, addressed to men with no knowledge whatever of the capabilities of commercial aeroplanes, would, of course, lead to some very curious replies. Consequently, any inquiry would have to be accompanied by a general statement, carefully framed, indicating the approximate load-carrying capacity, speed, and operating costs of commercial aeroplanes.

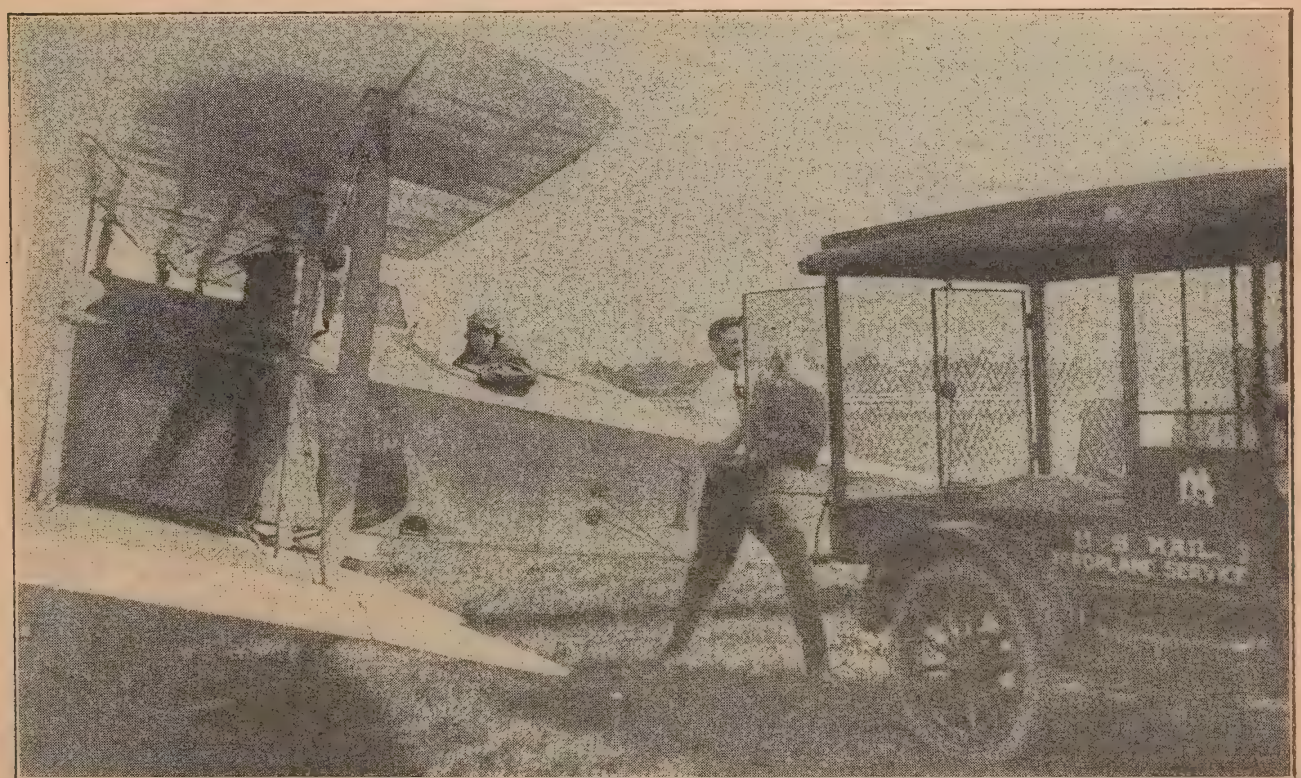
The man on the spot would have to be given an opportunity of comparing the cost of working the service with the increase in the value of land and produce that would be likely to result from the service existing. There would be no question of the service itself being self-supporting as a commercial undertaking. There is no reason why it should be so.

A Communal Charge.

In the old days we tried to make our roads self-supporting by adopting the rotten system of tolls. We have given this up because we realised that the roads must necessarily be a charge upon the community, local or national. By the provision of roads the community assists everyone who wishes to carry goods by land. In this case it was not necessary for the community actually to provide the conveyances, and to that extent the case is different. The principle is, however, the same.

It would never pay a carrier to cart goods in wheeled vehicles if the community had not first subsidised him by providing roads for his use. This subsidy is, in fact, a vital and a very considerable one. Now, the only way in which we can subsidise aerial services is by a payment in return for an undertaking to run the services.

The aerial carrier does not require a road but he requires monetary assistance instead. When the various Colonies had decided what aerial services they wanted, the Government would not necessarily run those services itself. The better alternative



THE CHICAGO-NEW YORK AERIAL MAIL.—The arrival of a mail machine at Belmont Field and the transfer of mail bags to a Post Office truck.

would be to encourage private enterprise, subsidised by Government.

The point is that the necessary subsidy would involve a much smaller charge upon the Government funds than would be necessary if rail or road communication were created in every case.

It would only be when the subsidy necessary for a steadily increasing aerial service became so considerable as to amount to the equivalent of the interest on the first cost of road or rail, that either of the latter would have to be considered. In the meanwhile, the system of subsidy to the promoters of aerial services would be the cheapest way of providing the required communication.

The Analogy of the Road.

When we establish a road in a young Colony we do not do it because the road is going to be a paying proposition in itself, but because it is going to increase the value of the Colony and facilitate its development, rendering it more productive. The assistance required for aerial services must be looked at from just the same point of view.

If the position were properly explained and a general indication of the capabilities of an aerial service sent out with the inquiry as to what services were wanted, there is no reason why we should not get a reasonably intelligent set of replies.

Large numbers of services would be suggested and, if available funds would not suffice to establish all at once, then the most promising would have to be selected for first treatment. The selected services would then be scheduled and tenders would be invited for their operation, subject to conditions which would have to be properly drawn up.

AERIAL MAIL NOTES.

U.S.A.

The United States Post Office has issued a report of operation and maintenance of the Aerial-Mail Service for June, 1918. This report is of interest, as it is the first to give the actual costs of running an aerial-mail system.

Eleven machines were utilised for carrying mail during June, and they covered a total mileage of 14,155½ in 183 hrs. 51 mins. flying time. In this time 2,787 gallons of petrol were used, which averages 5.07 miles per gallon. Counting all expenses incurred in running the aerial-mail during June, the cost per mile averages $.7009.

For June the aerial-mail system shows a large loss, although this may be accounted for by considering the routes taken. From New York to Cleveland, Washington, and Chicago there are regular train services, and the mails usually leave New York for these places at night. As the mail aeroplanes are not yet able to fly at night, owing to not having properly lighted landing grounds, the ordinary mail routes are practically as fast, and not so expensive, as the aerial-mail routes. For this reason many business houses send their mail in the usual manner.

The following table shows the receipts and expenditure for June :—

14,155½ miles covered at average cost of $.7009 per mile	$9921.59
990⅛ lbs. of letters at 16 c. per oz.	2534.72
Loss for June, 1918	$7386.87

This loss will gradually decrease as the routes are extended, especially when the service includes towns that have no direct rail communications with New York.

It is stated that next spring a night aerial-mail service is to be established between New York and Chicago.

A permanent aerial-mail service has now been inaugurated between New York and Chicago. On one occasion Mr. E. Gardner made a return flight, carrying mail, in 14 hours, including three stops, between these points. The U.S. aerial-mail service is now in charge of the Post Office Department, and only civilian pilots are employed in carrying mail.

The officially issued report of operation and maintenance for July shows a decided improvement on the June report. Ten machines carried mail during the month, and covered a total mileage of 14,601 in 188 hrs. 53 mins., flying time. In this time 3,211 gallons of petrol were consumed, which averages 4.54 miles per gallon. The average cost of running the mail, including all expenses incurred, was 0.6,849 dols per mile.

The following table shows the receipts and expenditure for July :—

	Dols.
14,601 miles covered at average cost of 0.6849 dols. per mile	10,000.22
1,476 lbs. of letters at 16c. per oz.	3,778.56
Loss for July, 1918	6,221.66

As compared with the June figures, this shows 1,165.21 dols. decrease in loss.

CANADA.

On July 9th, 1918, the first civilian flight with Government mail was carried out by Miss Katherine Stinson, who flew a Curtiss aeroplane.

Miss Stinson started from Calgary at 6 p.m. and landed at Edmonton 125 minutes later, a distance of 196 miles.

DEVELOPMENTS IN GREAT BRITAIN.

It is interesting to note that two companies have been formed with a view to establishing aerial conveyance lines between various places. The nominal nature of the capital leads one to believe that the companies were formed chiefly to acquire their names.

The Anglo-American Aerial Services, Ltd., is formed to establish, maintain, and work lines of aerial conveyance between the U.K. and the U.S.A., Canada, and Central and South America, and between the continents of North and South America, and the various States and Provinces thereof and other places, and to carry on the business of manufacturers of and dealers in aircraft, hangar and aerodrome proprietors, tourist agents, contractors, etc.

The London and Provincial Aerial Services Ltd., has been formed with the object denoted by the name.

The subscribers are the same persons in both companies.—R. M.

GERMAN ENTERPRISE.

It is stated by the "Telegraaf" that Holland had spent large sums of money on aeroplanes from Germany at a time when that country's military needs left her hardly any machines to spare. The result was that when the aeroplanes were delivered they were of an inferior quality and nearly useless.

[Which only shows what dangerous competitors in Commercial Aeronautics the Germans will be after the war, if they are already dumping duds on neutrals.—Ed.]

EDUCATING THE EAST.

On Oct. 14th, after spending the greater part of the day in a thorough inspection of London dockland, the Indian editors now visiting this country as the guests of the nation, went over an aircraft factory and aerodrome. They had a flight in a Handley Page machine, and, though the weather was dull and cloudy, they were greatly impressed by their bird's-eye view of London.

FINNISH AIR TRAFFIC COMPANY.

Stockholm, Sept. 29th.—According to advices from Helsingfors, an air traffic company has been formed there with a share capital of two million Finnish marks.

ITALIAN TRADE NOTES.

The efforts of several prominent citizens of that place to enlist Naples in the aeroplane business was officially crowned with success at the end of last month when the High Commissioner for Aviation visited the city and all its various aerial businesses.

He has subsequently promised to nurse the trade there to his utmost, reclaim the stolen hands, and furnish the raw stuff for manufacturing.

Naples, as well as having three big concerns well known to those who are interested in things aviatory, has a motor works and several small firms. A flying and testing "place" is situated near the city, and a lot is being done and expected.

As well as a number of official ceremonies, the Hon. Chiesa has been visiting and presiding over several important gatherings during the last few weeks. At —— he was in the air on a new machine reputed to be of great use. Even for a modern Minister he has an inestimable gift of energy. He is said to have hustled officials from the most modern of great nations entirely breathless. So perhaps we shall not wait long for the new Ansaldo wonder attributed to Ing. Brezzi, of that firm.—T. S. Harvey.

THE "B.P." MAGAZINE.

A number of magazines are running in works engaged upon aircraft manufacture, and one of the best is the "B. P." (Boulton & Paul, Ltd.). The August-September edition of this both interesting and amusing magazine contains 55 pages of reading matter, photographs, and drawings.

A silver gilt salver, suitably inscribed, was presented to Mr. and Mrs. J. J. Dawson Paul on the occasion of the celebration of their jubilee of married life. The subscribers to this token of esteem were all employees who had been with the firm for four years or over and they attended at the presentation. The various speeches are reported excellently in the magazine, and reflect a deal of credit on the amateur reporter.

In the "B. P." there is a serial technical article by Mr. O. M. Reynolds, on the "Orthographic Projection for Sheet Metal Workers," which is very instructive.

There are two pages of reading matter which must not be crowded out at any price, as the circulation of the magazine would be considerably reduced, amongst the female employees, without the contributions of "Sister Bertha." In these columns "Bertha" discourses, to her many "sisters," on the subjects of jam-making from vegetable ingredients, and the art of embroidering and on similar domestic intimacies.

The "B. P." allotment-notes, some interesting chronological information about Norwich Cathedral, with several illustrations, and many other articles, all combine in making a splendid edition.—R. M.

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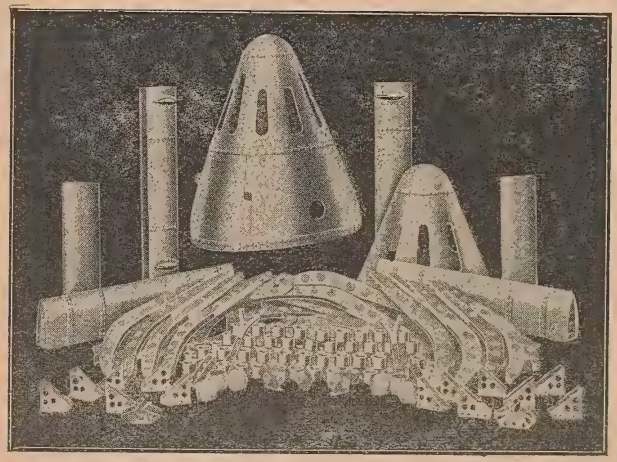
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Oct. 17th, 1918.

COPPER.—Copper supplies are quite satisfactory, although it is reported that the output does not show any substantial increase. This particularly applies to refined Copper, and the shortage of labour is undoubtedly responsible for this situation. This is a very serious problem, and needs careful and prompt handling. It is assumed that the U.S. Authorities have the matter in hand.

The price question will, it is understood, come before the War Industries Board for reconsideration on Oct. 16th. Contracts are being placed, at the present price, well beyond November, and it would appear that the general impression is that there will be no alteration, although rumours are already being circulated of a possible and necessary advance in price. The situation here is fairly satisfactory, supplies being well maintained.

Official prices are unchanged.

TIN.—The Tin Market has quietened down considerably, the elimination of competition having removed the disturbing elements. There is not much business being done at present, the Control machinery not yet being completed. There should, however, be some heavy buying shortly.

When the present system of Control was introduced, it was expected that there would be a few squeals. The Nigerean Tin Corporation has taken the lead. It is not, of course, expected that the system of control will be absolutely perfect.

At the same time, when Tin reaches £400 against a pre-war price of £150 per ton, it is time drastic action was taken, and one result of the centralised purchasing scheme has been a reduction of £60 per ton in two months. There does not even, at the present price, appear to be any reasonable ground for complaint.

The situation here is good; there has not been much buying recently, and stocks are fairly satisfactory.

Comparative Prices.

	Per ton.
Oct. 14th	£336 10 0
A week ago	£338 0 0
Highest Price, 1917	£309 0 0

LEAD.—The position of this market is unchanged and the official prices are also unaltered.

STEEL.—The output of Aircraft Steels is very satisfactory, and there is no fear of a shortage, notwithstanding the increased consumption during the past few months.

There is renewed activity in the Tool Steel trade due primarily to the Government having granted export licences. There is very little difficulty in obtaining deliveries of either Cast or High-Speed Steel at present.

Official prices remain unchanged.

TIMBER.—The Timber position, as far as supplies are concerned, is improving. There is not much Silver Spruce arriving, but large shipments of the new Spruce substitute have been received, and the Timber appears to be of fairly good quality. As a matter of fact, recent reports indicate that several shipments have passed Grade "A" tests for Silver Spruce substitutes.

In future shipments of similar quality, there are good grounds for assuming that the authorities are nearly out of the wood into which they were plunged by the failure of an earlier substitute Timber.

The position of Mahogany is fairly satisfactory, although recent shipments have not been exceptionally large.

It is too early to say what the results of Plywood control will be. At present, supplies are fairly satisfactory. The official prices are much lower than the prices which were being charged. One explanation is that the Government will be paying a lower freightage charge. This, of course, may be correct, so far as imported boards are concerned; but this argument is not tenable, when the prices of manufactured boards are considered. It is granted, of course, that manufacturers are entitled to a fair profit, and it is to be hoped that the low prices will not prejudice the present satisfactory output.

Official prices are unchanged.

FABRIC.—The position, generally, is unchanged; supplies are continuing satisfactorily.

THE PRICE OF IRISH FLAX.

The Flax Control Board has decided, in consideration of special circumstances which have arisen, and on the recommendation of the Ministry of Munitions, to make an advance on the prices previously announced for Irish flax of the 1918 crop of 5s. a stone on each grade. The Flax (Irish Crop) Order, 1918, will be amended accordingly.

ELECTRICAL HEATING.

Now that coal is rationed, 800 units of electricity can be taken in place of one ton of coal.

Any persons desirous of having electric fires will be sent an illustrated list of stoves, and also a small booklet on the household fuel rationing order on application to Belling and Co., Derby Road Works, Montague Road, Upper Edmonton, London, N.18.

AN UP-TO-DATE TILTING FURNACE.

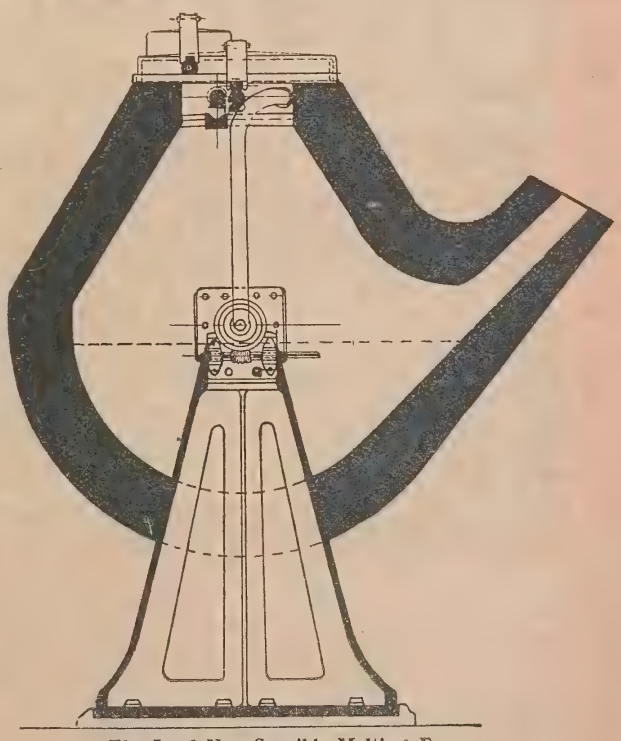
The "Non-Crucible" Melting Furnace (Tilting type), it is claimed, is the most modern furnace on the market to-day. No crucibles are required, which is a distinct advantage and saving in cost and labour. The cost of crucibles for one year would pay for one of the Non-Crucible Type Furnaces.

The fuel used for these furnaces is town's gas or oil with air-pressure, thus eliminating crucible bills at the end of the month.

The furnace is accessible at all times, and can be lifted from its bearings and taken direct to the moulds. The outside is kept fairly cool, owing to the air circulating between the brickwork and outer casing. It can be operated by either gas or oil—an air-pressure being required, or natural draught. No dirt or any foreign matter can get into the metal during melting; every provision being made to avoid this complication.

The furnace is fitted with a brickwork lining, giving better radiation and better results, with less fuel cost than any other furnace on the market, also iron pots are fitted, made from a special aloy, thereby giving greater rapidity of heating, with no absorption between pot and metal.

The fullest particulars will be sent on application to J. Lord, Ltd., Stockport.—R. M.



The Lord Non-Crucible Melting Furnace.

THE BLIC WORKS.

So much public interest has been aroused in the great electrical industry which has arisen in this country as the result of the war that a description of a representative electrical apparatus works may be interesting.

The works selected is that of the British Lighting and Ignition Co., Ltd., of London, a firm which embodies in its work all that is up to date concerning electrical knowledge and scientific production.

For convenience, the arrangement of the works is described much in the manner in which it would be inspected by a visitor.

In the basement is found the main stores housing all raw material, partly finished components and completed components. This department is in the hands of experienced store-keepers with an intimate knowledge of a huge collection of different parts and components in the various stages of completeness necessary to assemble the different products of the company, and numbering approximately 16,000 in all.

In the magnet stores and proving room all magnets are received from the various forgers, tested, proved, painted and held in readiness for delivery to the assembling shop.

The impregnating department is complete with impregnating apparatus through which all details of magnetos pass that have to be so treated, and is complete with a vacuum oven, pump and suitable steam heating apparatus.

On this floor is also included the hardening plant, carpenters and blacksmiths' shops and receiving, packing and dispatch departments.

The Main Deck.

The ground floor comprises the main machine shop, which is divided into sections as follows:—

Section 1.—Centre lathes where spindles, end plates, armature cores and magnet boxes, etc., are turned to size.

Section 2.—Large milling machines of every description.

Section 3.—Small milling machines of every description.

Section 4.—Automatic screw-making machines for producing screws complete. Automatic gear-cutting machines for cutting distributor and armature gear wheels, etc., automatic profile milling machines for milling the centres and sides of assembled armature cores.

Section 5.—Small capstan lathes for the manufacture of terminals, bolts, rivets and pins, etc.

Section 6.—Large capstan lathes for boring magnet boxes, turning end plates, and roughing out gear wheels and spindles, etc.

In the tool room all jigs, fixtures, cutters, gauges, and in fact every tool required in the factory, are manufactured.

In the pattern and mould room are made all metal and wood patterns as well as various moulds used in the manufacture of electrical insulating material.

The tool store is complete with all tools, jigs and fixtures used in the factory.

The millwright's shop is responsible for the maintenance of the running plant and tools through the works.

Inspection.

The first floor comprises the view room, which receives the products of the works in various stages of completeness and checks them against drawings and gauges.

The general, private and drawing offices are also contained on this floor.

On the second floor are found the insulating material department, repairs inspection department, repairs department.

In the repairs inspection department all machines for repair are examined and reported on, the work of the repairs being carried out in the repairs department.

The third floor comprises a machine shop in which are centre lathes, drilling machines and grinding machines for general work, also the contact-breaker shop in which the work of manufacturing the delicate mechanism of the contact-breaker is carried out completely.

The test room, in which machines have final running tests and the efficiency of all machines proved before leaving the works, is situated on this floor.

Assembly.

On the fourth floor is found the general assembling shop which draws finished components from stores and assembles them into the various types of complete magnetos.

This floor comprises also the polishing shop, and where is carried out the final finishing of all insulating material in addition to the armature insulation and test room where all windings and insulating parts are finally proved.

Here also is found the experimental department and laboratory which is replete with all requirements for scientifically testing and proving raw materials, finished components and finished machines.

In addition to the above described departments a separate works has been established close by which deals with the complete manufacture of condensers and mica insulating parts, and where the complete winding of armatures and coils is carried on.

Well-equipped canteens are provided for both male and female employees.

Testing in Magneto Manufacture.

The arrangements made for testing are very thorough. The plan is consistently followed as far as possible of testing each material as it enters the factory, and at each important stage in its career. Small sub-assemblies are tested before becoming parts of larger assemblies, and the main components such as armature, condenser, and the high-tension system leading from slip-ring to distributor receive exhaustive tests before ever they appear in the completed magneto. This method not only ensures absolute reliability in the finished product, but actually effects considerable economy by excluding faulty material from use at the earliest possible stage in its manufacture.

Many users of Bosch magnetos have known cases when a machine after being for a considerable time in service, perhaps for many months, became gradually "weak"; remagnetising did not improve it, and frequently accelerated an entire breakdown. The cause of these breakdowns is now known and suitable apparatus has been devised which at once detects such faults.

It is not surprising to learn after this that the failure of a magneto while undergoing its duration run is of exceedingly rare occurrence, and that subsequent trouble when in service has reached almost the vanishing point.

THE ENCOURAGEMENT OF KEY INDUSTRIES.

At the Central Hall, Westminster, recently, there was opened an exhibition of the various key industries over which Germany used to hold full sway, but concerning which Great Britain is now able to supply herself.

One of the most interesting exhibits was a display of magnetos. Various parts of this necessary article have tungsten in its various forms in their composition, and Germany, before the war, controlled all supplies of this metal. The importance of tungsten can be realised from the words of Mr. Colin G. Pink, Ph.D., President of the American Electro Chemical Society, who said: "To deprive a nation of tungsten is to cripple its military power in time of war, and its industrial power in time of peace."

There are three commercial types of tungsten, which incidentally is obtained from Cornwall, Burma (over 33⅓ per cent. of the world's production), Australia, New Zealand, Canada and South Africa. They are:—

1. Furnace product after roasting mixed ore and soda.
2. Produced by boiling and evaporating No. 1.
3. No. 2 treated with hydrochloric acid.

Tungsten is used for making many articles, only a few of which are set down below:—

1. It is used as an alloy, with iron chromium and vanadium for the making of tool steels.
2. It is used, from the reduction of No. 3 heated in crucibles, and washed and dried, for the making of contacts for magnetos.
3. It is used in the manufacture of magnets for magnetos.

The various parts of magnetos were shown dissected at the exhibition, and also many varied types, such as can be used in engines for tanks, aircraft, motor lorries, cars, transports and motor cycles. One company's display was very interesting as it showed the magneto working.

Another feature of interest was a product called mozanite, which is obtained from a special sand passed through a certain chemical process. The Germans used to buy the sand from Australia at £1 a ton, and sell the resultant product to Great Britain at 42s. a gramme. It is estimated that this sand was worth £1,000 a ton to Germany. Mozanite is largely used in the manufacture of gas mantles.

NORTH-EAST COAST INSTITUTION GOLD MEDAL.

The Engineering Gold Medal of the North-East Coast Institution of Engineers and Shipbuilders has been awarded to Mr. Harry R. Ricardo, B.A., for his Paper, entitled "High-Speed Internal Combustion Engines," which was read before the Institution on April 30th last.

GRAHAME-WHITE BOXING.

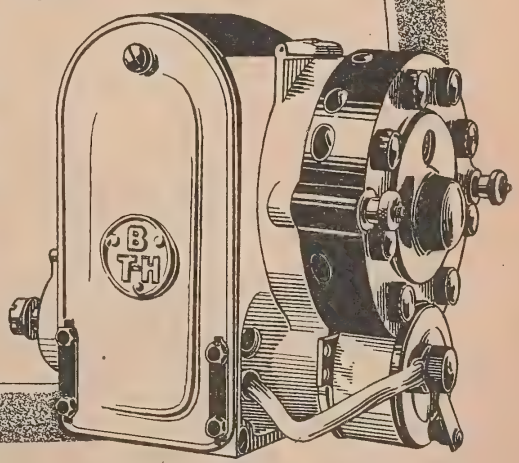
The boxing section of the Grahame-White Recreation Association held another tournament on Oct. 9th, an audience numbering about 800 assembling in the large hall attached to the works. During the evening Joe Conn, who had arranged to give an exhibition, was introduced; but, owing to the imminence of his championship contest with Tancy Lee, this exhibition had to be postponed to another occasion. In the ten-round contests, Alf Green (Finsbury) beat Wally Trainer (Hoxton) and A. J. Milner (A.S.C.) beat Serjt. Jarvis (A.S.C.); while in the six-round contests G. Hutton (Grahame-White) beat Fred Watson (Clerkenwell), G. Burrows (Grahame-White) beat A. Thick (Grahame-White), and A. Allen (Grahame-White) beat E. Burns (Grahame-White). In a nine-stone competition C. Oakes beat W. G. Hull.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Peace and Industrial Shares.

Naturally enough, those people with a lot of money invested in essentially War Industrial securities are growing increasingly nervous with every phase of the German Peace Offensive. It is a difficult problem they have to solve; indeed, the matter scarcely lends itself to any satisfactory or definite solution.

One has to postulate certain conditions with the restoration of peace; but, as there is no precedent to work on, any hypothesis assumed of the post-war state of a particular industry is questionable.

Unreasonable Selling.

But there are, unfortunately, a number of nervous investors who can only visualise poor and troublous conditions for the majority of those commercial undertakings that have managed to reap a rich harvest from the war. Such people have been liquidating their investments, regardless, of, in some cases, at all events, any immediate loss in capital value; hence, the market valuation of many shares has depreciated considerably. Their action may be justified by events in time. On the other hand, they may not, and, in the long run, it may prove that they panicked and suffered unnecessarily.

Better Physical and Financial Position.

Admittedly, there are some shares that might be profitably sold just now; but it is equally certain that there are companies which will prosper just as well under peace conditions. It must not be overlooked that many companies have seized the opportunity presented by the incidence of the war taxation to strengthen their financial and physical condition very materially. Lots of money, which might have gone to the shareholders, has been absorbed by taxes, it is true; but, at the same time, lots of money, which might have been absorbed by taxes, has gone back into the business. The resultant improvement in the physical condition should enable such companies to resist any industrial strain, on the one hand, and develop and improve their productive capacity on the other hand.

Another Reserve Capitalised.

The latest example of reserve capitalisation is provided by John I. Thornycroft and Co. New £1 shares to the number of 148,500 are offered to shareholders at 10s., the balance of 10s. per share being paid out of the reserve fund. This is, therefore, equivalent to a bonus of 50 per cent. on top of the dividend of 17½ per cent. The accounts now issued cover the operations of the year to July 31st, 1917, and are rather musty. The profit reached £109,800, after allowing for the additional taxes, and compares with only £27,100 for the previous financial year. The growth seems very striking, but it must be taken into account that these totals were struck after providing two years' excess profit duty and other special charges.

Cash or the New Shares.

If they choose, shareholders can obtain the bonus of 10s. per share, without taking up the new shares. It is an alternative that will be appreciated by some shareholders, though the great majority, one would imagine, will endeavour to secure a bigger cash profit. They can do so by subscribing for the new shares at the cost of 10s. per share, plus 10s. out of reserve, and then holding them for a possible appreciation in the market value. The present shares command about 50s., equal to a yield of 7 per cent. on the past dividend. It is questionable whether the dividend can be maintained on the doubled amount of ordinary shares, but it is more than likely that a dividend justifying a substantially higher price of 20s. for the shares will be earned. In these circumstances, it seems better to subscribe for the new shares, instead of merely taking the cash bonus.

Record of the Dividends.

Prior to the war the company was recuperating and strengthening its position after a period of unsettlement, and the business now promises to give a good account of itself in the future. In 1911 the arrears of preference interest were wiped out, and the ordinary shares received a dividend of 5 per cent. For 1912 5 per cent. was again paid, followed by 2½ per cent. for 1913, 8 per cent. for 1914, 10 per cent. for the period to July, 1915, and afterwards 17½ per cent

B.S.A. and Aircraft.

In the course of a long speech at the meeting of the shareholders of the Birmingham Small Arms Company, the chairman explained the capitalisation of the reserve fund, and stated that works were wholly employed on Government business. Continuing, he remarked:—

"Prominent in the war work of the Daimler Company (an auxiliary, by the way) is the manufacture of aeroplane engines and aeroplanes on a very large scale indeed, and that company, like the Birmingham Small Arms Company, has enjoyed a well-earned reputation for the extent of its output and the reliability with which it has fulfilled its promises. The experience gained in the construction of aeroplanes and their engines will doubtless prove of commercial value to the company when peace again reigns. I need hardly say that the extraordinary increase in the volume of our manufactures has been accompanied by a corresponding increase in the size of all our factories and their equipment, and the result to-day is that we are possessed of machinery, the most modern of its kind, which will enable us in the future to manufacture in very large quantities and with great efficiency.

A Key Industry.

"The problem of the utilisation of our facilities after the war is constantly engaging the attention of your board, and when this war is finished we shall be able speedily to turn on to a peace programme, which should ensure the continued prosperity of the company. One item in that programme from which we anticipate good results is that, in association with the Metropolitan Carriage, Wagon, and Finance Company, we are actively interesting ourselves in a line of manufacture forming a 'key industry,' for which in the past manufacturers have almost entirely been dependent upon importation from other countries."

FINANCING THE ITALIAN TRADE.

In furtherance of the decision taken at the general meeting of shareholders on June 19th last approved of by the Court and Ministry of Commerce in August, the F.I.A.T. is calling up the whole 100 million lire of its nominal capital, of which up to now only 50 millions had been available.

The new shares, 125,000 in number, are offered at par—200 lire—with 6 per cent. interest from July 1st to the old shareholders at the rate of one new to every two old shares held.

The business called, "Officine Meccaniche Italiane," of Reggio—not the Reggio of the far South—which is a company with 24 millions of lire paid-up capital, at a general extraordinary meeting held on Oct. 10th, is calling for eight more millions. One believes the firm is not entirely unconnected with the aircraft trade.—T. S. H.

NEW COMPANIES.

London and Provincial Aerial Services, Ltd.—Private company. Registered Oct. 11th. Capital £100 in £1 shares. Objects as indicated by the title. The subscribers (each with one share) are:—Lionel Phillips, 3, Kingscroft Road, N.W.2, exporter; W. H. Lewis, National Hotel, W.C.1, aircraft manufacturer. The first directors are:—Lionel Phillips, W. H. Lewis and A. M. Willmott. Registered office: 292, Charing Cross Road, W.C.

Grampus Armament Co., Ltd.—Private company. Registered Oct. 15th. Capital £2,500 in £1 shares. Manufacturers of air, naval and military armament and equipment, machinery, mechanical appliances, etc. The subscribers (each with one share) are:— A. Hubbard, 98, Leigham Court Road, Streatham, S.W., gun manufacturer; H. D. Harrod, 22, Collingham Place, S.W.5, managing director of J. Liddell and Co., Ltd. The first directors are:—A. Hubbard and H. D. Harrod. Registered office: 33-6, King William Street, E.C.

SATISFACTIONS, MORTGAGES, AND CHARGES.

Triplex Goggle Mask and Lens Co., Ltd.—Debenture dated Oct. 3rd, 1918, to secure £5,250, charged on freehold and leasehold properties, existing Government contracts and the company's general assets. Holders: Cox and Co., Charing Cross.

'Human Documents'

Herewith we reproduce the first of a series of 'Human Documents' which tell eloquently of the great part that 'Triplex' is playing in the War.

Catalog Mailed Free.

THE 'TRIPLEX' SAFETY GLASS CO., LTD.
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No. 1.

January 20th, 1917.

Gentlemen,

Please find herewith one pair of 'Triplex' Safety Glass Aero Goggles. No doubt you will see by their condition that I am very greatly indebted to 'Triplex' Safety Glass, as it entirely saved my eye from being very seriously injured in a flying accident.

Yours faithfully, 2nd Lieut.——

Actual photograph reproduced below.

'TRIPLEX' SAFETY GLASS



Leather for Aeroplanes

Fuselage Leathers
Cut to Templates.

GEORGE ANGUS & CO., Ltd.
NEWCASTLE-ON-TYNE.

(*Continued from page* 1484.)

and artillery, and reconnaissance and photographic work was also accomplished.

Over 10 tons of bombs were dropped on railways and centres of hostile activity. The enemy's troops and transport were harassed by machine-gun fire from the air.

In air fighting, one German machine was destroyed.

All our machines have returned.

Owing to weather conditions, no night operations were possible.

Oct. 17th, 7.43 p.m.—On Oct. 16th low clouds and thick mist made continuous operations in the air impossible, but at intervals, when the mist lifted, our contact machines kept touch with our advancing troops and our low-flying machines harassed the enemy.

Hostile aircraft showed no activity, and no air fighting took place.

All our machines have returned.

Oct. 18th, 7.15 p.m.—On Oct. 17th, in spite of adverse weather conditions, our squadrons were active along the whole front. Many reconnaissances were carried out and photographs taken. Close touch was kept with our advancing troops, and their movements were reported to the Headquarters concerned.

The enemy railway centres behind the northern battle front were attacked with heavy bombs, and on all fronts his troops were harassed with light bombs and machine-gun fire, a total of 9¾ tons of bombs being dropped by us.

There was very little activity on the part of the enemy's aircraft. One German machine was destroyed in air fighting.

One of our machines is missing.

No night operations could be carried out on account of thick mist.

Oct. 19th, 8.17 p.m.—On Oct. 18th flying operations were again greatly handicapped by low clouds and thick mist, but our machines continued their activity, and accomplished some reconnaissance and photographic work.

A very successful attack was carried out from a low altitude on Tournai junction, and on troops, transport, and German aerodromes in the vicinity. An ammunition train was blown up and set on fire from end to end, another train received four direct hits, and a large explosion was caused in the station. Hangars at two aerodromes were set on fire, transport columns were hit, and many casualties were caused to enemy troops by machine-gun fire. During the day over six tons of bombs were dropped by us.

German aeroplanes showed very little activity throughout the day. In air fighting, three of the enemy's machines were shot down and two were driven down out of control. In addition, one hostile machine was shot down in our lines by rifle fire from our infantry.

Two of our machines are missing.

In spite of the thick mist, some of our night-bombing machines succeeded in dropping three and a half tons of bombs on railways on the enemy's lines of communication, obtaining direct hits on sidings and permanent way.

All these machines have returned.

Oct. 20th, 6.35 p.m.—The present spell of bad weather continued through-out Oct. 19th, and operations could only be carried out under great difficulty, but, flying in mist, cloud, and rain, our pilots completed some valuable reconnaissance and contact patrol work, and succeeded in taking some photographs.

Over seven tons of bombs were dropped on railway stations behind the northern battle-front and on the enemy's troops and transport.

There was little activity on the part of hostile aircraft, and no air fighting took place.

One of our machines is missing.

No night operations could be carried out on account of the weather conditions.

Oct. 21st.—On the afternoon of the 21st inst. our machines bombed the railways at Thionville. Direct hits were obtained on the lines.

In the course of the fighting, one enemy aeroplane was driven down out of control.

All our machines returned.

Oct. 21st, 7.40 p.m.—On October 20th some of our machines successfully accomplished low-flying reconnaissances and contact patrols, dropping a few bombs and firing with machine-guns on enemy troops while doing so. Weather conditions prevented all further operations.

All our machines have returned.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France:—

Oct. 15th.—Thick mists, clouds, and rain made any operations practically an impossibility, but in spite of these conditions we attacked Frescaty aerodrome. One bomb was dropped from a height of 40 ft. through the roof of the Zeppelin shed, blowing all the windows out, and another bomb was dropped on a hangar, wrecking it. Mechanics ran out on hearing the explosions, and were promptly machine-gunned, several casualties being caused. Ground defences were apparently surprised, as no attempts were made to open fire until the attack was over.

We had no casualties.

Oct. 17th.—Owing to rain and thick mists no operations by the R.A.F., Independent Force, have been possible since Oct. 11th.

Oct. 18th.—On the afternoon of the 18th inst. our machines attacked the railways at Metz-Sablon. Observation was difficult, but bursts were observed on the railway workshops and in the railway triangle.

All our machines returned.

On the night of the 18th-19th inst. the railways at Saarburg (south of Trèves) were attacked. Weather conditions were very bad and results could not be observed.

We had no casualties.

THE CASUALTY LIST.

MILITARY.

Reported Oct. 16th.

Previously reported Missing, now reported Killed.—Ewart, Sec. Lt. K. P., R.F.C.

Australian Force.—Wounded.—Deamer, Sec. Lt. S. H., F.C.

Missing.—Gould-Taylor, Lt. J., F.C.; Thomson, Lt. B. G., F.C.

Reported Oct. 18th.

Indian Forces.—Previously reported Missing, now reported Wounded and Prisoner in German Hands.—Forrest, Lt. L. H., I.A., attd. R.A.F.

Reported Oct. 19th.

Australian Force.—Previously reported Missing, now reported Killed.—Gould-Taylor, Lt. J., F.C.

Thomson, Lt. B. G., F.C.

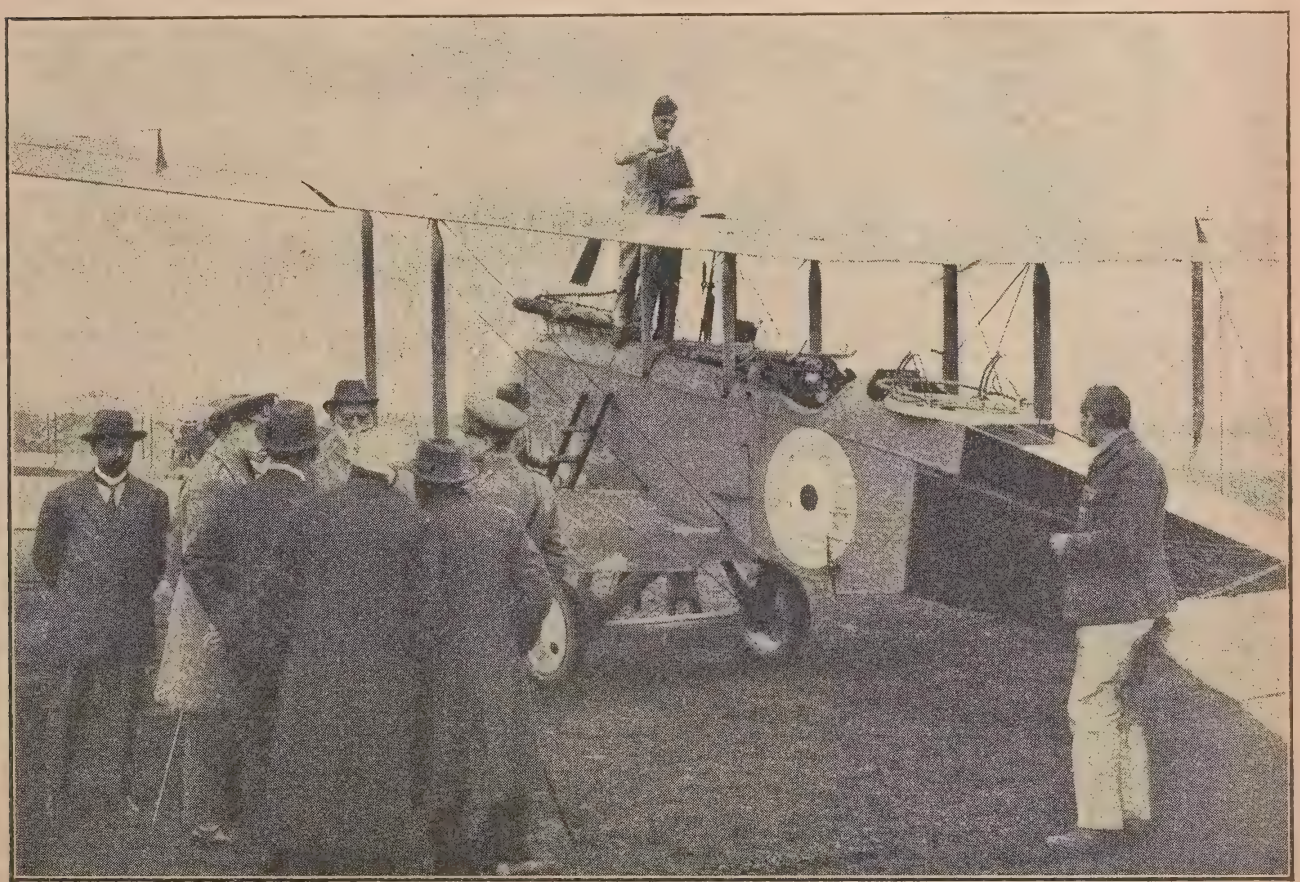
Reported Oct. 21st.

The following officers who were prisoners in Germany have arrived in Holland for internment:—

Griffin, Lt. R. T., R.F.C.

Griffiths, Lt. C. D., R. Welsh Fus., attd. R.F.C.

Odling, Lt. V. C., R. Berks R., attd. R.F.C.



EDUCATING THE EAST.—A gathering of Indian Editors watching preparations for the start of an aeroplane on a demonstration flight.

Reported Oct. 22nd.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Tolhurst, Lt. B. J., D. or Well. R., attd. R.F.C.

AUSTRALIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED DIED OF WOUNDS.—Howard, Capt. R. W., M.C., F.C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Cox, Lt. G., F.C.

CANADIAN FORCES.—ACCIDENTALLY KILLED.—Trotter, Lt. C., Alta R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Pitman, Lt. R. C., N.S. R, attd R.A.F.

* * *

The following officers, who were prisoners in Germany, have now arrived in England:—

Rushworth, Capt. H. M., Lond. R., attd. R.F.C.; Trollope, Capt. J. L., M.C., R.F.C.

AIR FORCE.

Reported Oct. 17th.

KILLED.—Barber, Sec. Lt. G. S.
Brandt, Lt. J.
Roberts, Lt. J. H., R.F.A. (S.R.)
Underwood, Lt. R. G.
Williscroft, Sec. Lt. W. B.

PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.—Caton, Sec. Lt. F.

WOUNDED.—Ballantyne, Sec. Lt. J. B.; Bennett, Lt. A. W.; Johnson, Sec. Lt. A.; Joseph, Capt. W. E., R.F.A.; Kime, Sec. Lt. G. H. E., Essex R.; Kirkland, Lt. H. G.; Laird, Sec. Lt. D. P.; McInnes, Sec. Lt. C. R.; Rycroft, Sec. Lt. W. S.; Shrimpton, Sec. Lt. H. F.; Squire, Sec. Lt. A. G.; Wood, Sec. Lt. H. C.

MISSING.—Allan, Sec. Lt. A. M.; Blundell, Sec. Lt. J. B.; Boulton, Sec. Lt. N. S.; Bramwell, Sec. Lt. R.; Bromley, Lt. J. L., A.S.C.; Case, Sec. Lt. C. H., Manch. R.; Fair, Sec. Lt. V. A., K.R.R.C.; King, Sec. Lt. J.; McCaig, Sec. Lt. W. G.; Mills-Adams, Sec. Lt. A. H.; Moxon, Sec. Lt. N. F.; Payne, Sec. Lt. A. C. J., R. W. Kent R.; Rees, Sec. Lt. D. C.

Reported Oct. 18th.

KILLED.—Bond, Sec. Lt. R. H.
Davis, Sec. Lt. W. J.
Hammond, Capt. J. J.
Haynes, Capt. W. H.
Howard, Sec. Lt. J. W.

DIED OF WOUNDS.—Bennett, Lt. A. C.

WOUNDED.—Douglas, Sec. Lt. A. A.; Hicks, Lt. G. R.; Robson, Lt. M. G., M.C.; Skinner, Lt. H. W.; Wakeman, Sec. Lt. M. W.; Whellock, Sec. Lt. C. S.; White, Sec. Lt. J. W.

MISSING.—Boswell, Sec. Lt. A. T. W.; Davis, Sec. Lt. L. S.; Eveleigh, Sec. Lt. E. R.; Featherstone, Lt. G. A., Firth, Lt. J. W.; Gundill, Sec. Lt. R. P.; Hopkins, Lt. F.; Joffe, Sec. Lt. W., D.S.O.; Matheson, Lt. A. M.; Morgan, Lt. R. J.; Owen, Sec. Lt. F.; Pierce, Lt. J. B.; Preece, Sec. Lt. E.; Ramsay, Lt. J. W. McN.; Sanderson, Lt. A. M.; Sherek, Lt. P.; Sheehan, Sec. Lt. M. J.; Smith, Lt. G. J.; Smith, Sec. Lt. T. T.

Reported Oct. 19th.

KILLED.—Barnes, Sec. Lt. A.
Bell, Sec. Lt. L. H.
Kelly, Lt. W. J.
Sheridan, Lt. J. W.
Sanders, Sec. Lt. R. F.

DIED OF WOUNDS.—Arkle, Lt. C. W.

WOUNDED.—Baker, Lt. C. G., Chinn, Sec. Lt. T. E., Croudace, Lt. H., Hannay, Capt. W. A., Johnson, Sec. Lt. N. K., Lee, Lt. C. H., MacLarty, Sec. Lt. J., Meddocks, Capt. H. H. Smallman, Lt. B. S., Wallace, Lt. W.

MISSING.—Jennings, Sec. Lt. J. E., Shook, Lt. J. K., Telfer, Sec. Lt. H. C., Thomas, Sec. Lt. H. S., Thompson, Lt. C. W. M., Weale, Sec. Lt. F. H. A., Welch, Capt. H. J.

CADETS KILLED.—Hacker, J. McM.
Morgan, A. D.
Percival, H. K.
Stroud, W. G.
Wilcock, J.

Reported Oct. 21st.

KILLED.—Attwood, Sec. Lt. J. T. L.
Berry, Lt. H. H.
Lethbridge, Sec. Lt. T. J.
McMurdo, Sec. Lt. G. B. M.
Munro, Sec. Lt. J. W.
Wayman, Sec. Lt. R. F.

DIED OF WOUNDS.—Gordon, Sec. Lt. R. V.

WOUNDED.—Huck, Sec. Lt. D. E.; Jacobs, Capt. B.; Jenkins, Sec. Lt. J. G. T.; Katte, Sec. Lt. A. P.; McClinton, Sec. Lt. F. D.; Martyn, Capt. T. J. C.; Pool, Sec. Lt. B. G.; Small, Sec. Lt. W.; Smith, Sec. Lt. W.; Trotter, Lt. P. F.; Tuck, Capt. D. A.; Watson, Lt. J. A.

MISSING.—Bowater, Capt. A. V.; Brumell, Lt. H. P.; Darby, Sec. Lt. E.; Gedge, Sec. Lt. G.; Halford, Sec. Lt. W. H. L.; Hollings, Sec. Lt. H.; Melvin, Lt. D. L.; Moore, Lt. C. R.; Patey, Capt. H. A.; Kingrose, Lt. R.; Stevens, Lt. A. M.; Yerex, Lt. L.

PRISONER OF WAR.—Bockett-Pugh, Lt. H. C. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Dean, Sec. Lt. H.
Saunders, Sec. Lt. W. J.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Boot, Capt. A. J.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Gillan, Lt. C. J.
McLeod, Lt. G. D.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Coleman, Sec. Lt. C. B.
Evans, Lt. H. B.
Gerson, Sec. Lt. L. M.
Inman, Sec. Lt. H.
Le Roy, Lt. H. L.

Reported Oct. 22nd.

KILLED.—Crombie, Lt. W. E., M.C.
Donald, Sec. Lt. C.
Gerhardi, Sec. Lt. H.
Hinder, Sec. Lt. A.
Padmore, Lt. A. R.

DIED OF WOUNDS.—Haynes, Sec. Lt. P. A.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Johnson, Lt. T. A.

WOUNDED.—Ambler, Lt. J. C.; Barry, Lt. H. E.; Brown, Sec. Lt. F. R.; Casey, Lt. R. F.; Eastaugh, Lt. W. S.; Emery, Lt. H. J.; Garrison, Sec. Lt. A. E., M.C.; Gordon, Lt. R. McI.; Parsons, Lt. H. M. S.; Quaife, Sec. Lt. A. P.

MISSING.—Beck, Lt. T., M.C.; Bell, Sec. Lt. E. M.; Buckingham, Capt. W.; Clark, Capt. A. B., M.C.; Farrand, Sec. Lt. E. S.; Fletcherr, Sec. Lt. A.; Jenner, Lt. P. C.; Middlecote, Lt. E. W. A. G.; Rankin, Lt. W. A.; Steele, Sec. Lt. T. M.; Thompson, Sec. Lt. R. E.; Strang-Ward, Sec. Lt. F. L.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Simons, Sec. Lt. A. T.
Sinclair, Sec. Lt. L. R.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR, NOW REPORTED WOUNDED AND PRISONER OF WAR.—McKelvey, Lt. M. T.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Patrick, Lt. W. D.
Towne, Sec. Lt. L. L. F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Robinson, Lt. J. C.
Rogers, Lt. F. I.
Tempest, Sec. Lt. W. C.
Whitfield, Lt. G. H. P., M.C.

Reported Oct. 23rd.

KILLED.—Allanson, Lt. W. G.
Anderson, Sec. Lt. W.
Cruise, Sec. Lt. M. G.
Troth, Sec. Lt. G. N.

DIED.—Hill, Lt. R. F.

DIED OF WOUNDS.—Dunbar, Sec. Lt. J. C.
Pullar, Sec. Lt. J.

WOUNDED.—Avery, Sec. Lt. D. J.; Bairstow, Sec. Lt. A.; Britton, Lt. R. E.; Griffiths, Sec. Lt. A. H.; Patterson, Sec. Lt. E. M.; Roberts, Sec. Lt. G.; Sutcliffe, Sec. Lt. T. C.

MISSING.—Carpenter, Lt. E.; Cowan, Lt. J.; Hall, Lt. R.; Hill, Sec. Lt. S. J.; Jones, Lt. L. N.; Sterling, Lt. W. C.; Sykes, Lt. J. A.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Birkhead, Lt. J. B.
Brown, Lt. H. M.
Connolly, Lt. S. D.
Forsyth, Lt. A. F.
Goffe, Sec. Lt. W.
Hill, Sec. Lt. S. J.
Mallett, Lt. H. P.
Marsden, Sec. Lt. C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Handley, Sec. Lt. J.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Tysoe, Lt. C. G.

PERSONAL NOTICES.

NAVAL.

DEATHS.

BRAGG.—Lt. Eric L. Bragg, R.A.F. (late R.N.A.S.), who was killed in action on July 21st at Cattaro, was the eldest and dearly loved son of Mr. and Mrs. W. L. Bragg, of 60, Barrington Road, S.W. He was 21 years of age.

GRIGG.—Sec. Lt. Denis Hugh Grigg, R.A.F. (late R.N.A.S.), who was killed on Oct. 11th while flying abroad, was the second son of F. C. and R. L. Grigg, of Yvetot, Downs Court Road, Purley. He was 19 years of age.

ENGAGEMENT.

FITZHERBERT—ERICHSEN.—An engagement is announced between Capt. Evelyn C. W. FitzHerbert, D.S.C., R.A.F., son of Arthur Vesey FitzHerbert, of Ballentere Hall, Dundrum, Co. Dublin, and Enid, elder daughter of the late Harold Woolright, barrister-at-law, and Mrs. F. O. Erichsen, of 14, Vale Avenue, Chelsea.

BIRTH.

ANDREWS.—On Sept. 21st, at St. Pol Freiston, Lincs, to the wife (*née* Martin) of Lt. J. C. Andrews, R.A.F. (late R.N.A.S.)—a son.

* * *

The following appointments have been made in the Women's Royal Naval Service:—

OCT. 18th.—Asst. Prins.—Miss H. Glanfield, to Howden R.A.F. Stn., Yorks., Sept. 2nd; Miss E. R. Gill, to Torquay Seaplane Base (decoder, non-admins. mobile).

* * *

The following appointment has been made:—

OCT. 19th.—Lt. E. C. Brodribb to "Ganges," Oct 16th.

MILITARY.

DEATHS.

ALLEN.—Capt. D. G. A. Allen, R.A.F., killed in action on Oct. 8th, was the second son of Mr. A. W. Allen, of St. Pierre, Willesden Green. Born in 1890, he was educated at Merchant Taylors' School, where he gained his Rugby colours. He proceeded with a Sir Thomas White Scholarship to St. John's College, Oxford. He took a second class in Moderations and in the final schools, and was preparing for the Civil Service examination when war broke out. He received his commission in the Durham Light Infantry in 1915, but was at once attached to the Royal Flying Corps, serving as an observer throughout the Darfur Expedition. Returning to England, he qualified as a pilot, and served subsequently in France for nine months, was then employed for some time as an instructor at home, and early this month returned to the front.

BELL.—Lt. J. M. G. Bell, M.C., R.A.F., who died on Oct. 3rd of wounds received on Oct. 1st, aged 27, was the eldest son of Mr. and Mrs. Richard Bell, of Sooke, Canada, formerly of Belfast. He came to England with the First Canadian Contingent in 1914, and later joined the R.F.A. He was awarded the

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M.C. for the following act of gallantry at Cambrai in November, 1917:—"When the enemy attacked and approached in view of the battery, he brought his section into the open to engage the enemy, and himself took up an exposed situation and controlled and fought his guns with the greatest coolness and determination until his ammunition was exhausted." He afterwards transferred to the R.A.F.

COLERIDGE.—Lt. Colin Toss Coleridge, R.A.F., who was killed on July 23rd in an aeroplane accident at Deseronto, Ontario, where he was acting as instructor, has been gazetted M.B.E., in recognition of "saving life at the risk of his own and while in great personal suffering." When stationed at Fort Worth, Texas, last February, Mr. Coleridge had gone up in a machine with a cadet, to whom he was giving instruction. The cadet pulled the control pillar over too hard, and, being too near the ground (about 500 ft.) for an attempt to right the machine to succeed, it crashed and immediately caught fire. Mr. Coleridge was thrown out with four ribs broken and a severe cut on the head, but he crawled into the burning aeroplane and rescued the cadet, who was strapped in and pinned under some burning wreckage with a broken leg. Mr. Coleridge, who was severely burnt about the face and hands, then dashed loose earth over the cadet "whose legs were soaked with gasolene and burning badly," and put out the flames. Mr. John Coleridge, of Snettisham, Norfolk, has just received his son's decoration. Mr. Coleridge was 29 years of age.

CROCKETT.—Lt. Wallace John Crockett, R.A.F., who was killed on Sept. 19th last, was the second son of Mr. and Mrs. Herbert Crockett, of Telford Court Hotel, Streatham Hill, S.W. He was educated at Emwell House School, Warminster, and at the Kilburn Grammar School, London, and on the outbreak of war in 1914 was holding a responsible position in Manchester. In 1915 he enlisted in the Artists Rifles, and went to France later on in the same year. In addition to a good deal of active service, he did much useful work in connection with engineering. In 1917 he volunteered for the Royal Flying Corps, and returned to England last summer, and after training was granted a pilot's commission in the R.A.F. He was detailed for work on the French front, and did useful work there, but developed throat trouble through flying at high altitudes. After a period of rest in England and special training for bombing, he was ordered to another front last August.

DRIVER.—Lt. Hubert Weeks Driver, R.A.F. the eldest son of Mr. and Mrs. Arthur Driver, of Gill College, Somerset East, South Africa, has been officially reported killed, aged 20. After matriculating at Gill College, he proceeded to the South African College (now the University of Cape Town), where he took up engineering. It was during his second year at the University that he volunteered for the Flying Service. For his training he went to Egypt, and after gaining his wings and serving on that front he returned to England last July, and shortly afterwards proceeded to the front.

FRANCIS.—Sec. Lt. William George Francis, R.F.C., reported missing on March 10th last, and now reported killed on that date, was aged 19, and was the younger son of Mr. and Mrs. Arthur Francis, formerly of Avenue Lodge, St. Leonard's Road, Eastbourne. He was educated at Eastbourne College, where he was in the O.T.C., and joined the Artists Rifles O.T.C. in Feb., 1917. In the following May, however, he transferred to the R.F.C., in which he obtained his wings as pilot in October, and left for the Italian front on Dec. 10th, 1917.

LETTS.—Capt. John Herbert Towne Letts, M.C., R.A.F., who was killed on Oct. 11th through an accident while flying abroad, was the only child of Walter and Helen Letts, Steep Hill House, Lincoln. He was 21 years of age.

OSTLER.—Lt. Alan Ostler, M.C., R.F.A. and R.A.F., formerly one of the "Daily Express" war correspondents, has been missing since Sept. 16th, and is now known to have been killed on that day.

In 1911 he went to Southern Morocco for the "Daily Express." He got to Agadir and was expelled by the Kaid Ghillouli. He was attached to the Turkish forces during the first Balkan war in 1912, and he had a personal interview with the Sultan after the battle of Lule Bourgas. The next year saw him in Somaliland. He crossed from the Abyssinian frontier, had many adventures among the followers of the Mad Mullah, and finally reached Berbera, where he was arrested by the British authorities and sentenced to two months' imprisonment for making an unauthorised journey. The Colonial Secretary, however, cancelled the conviction.

At the beginning of the war Mr. Ostler was the "Daily Express" correspondent on the Russian front. He came home and joined one of the Yorkshire regiments, and was afterwards transferred to the Royal Field Artillery.

He fought in Gallipoli and was invalided home with enteric. In 1916 he was in France. He won the M.C. during the fighting in Trones Wood in July, and was wounded on the Somme front in October. A few months ago Mr. Ostler joined the Royal Air Force.

The following account of Mr. Ostler's death is taken from the "Daily Express" of Oct. 16th:—

"The last fight of Lt. Ostler was characteristic of the man. It is described in the letter of a comrade at the front.

"On the night of Sept. 15th he declared in mess that he was 'fed up' with artillery observing, and that he would ask permission to go out next morning to fire his machine-gun into Cambrai or to kill Boches. His work was that of observer with an R.E.8 artillery patrol, and this was not sufficiently exciting. He had, however, already brought down two German machines with the aid of his pilot.

"Lt. Ostler started out at 5.15 on the morning of Sept. 16th with a new pilot, and he went off very pleased.

"Later in the morning a fight was observed in the region of Gouzeaucourt, and a machine of the pattern in which Lt. Ostler flew was seen to go in that direction. He never returned."

OSBORNE.—Lt. Trevor Leonard Osborne, attd. Devonshire Regt., and formerly of the R.A.F., who was killed in action on Sept. 30th, was the youngest son of Mr. and Mrs. W. N. Osborne, Brixton Hill, S.W. He was 19 years of age.

RUCKER.—Lt. Robin Sinclair Rucker, R.F.A., who died of wounds on Oct. 12th, aged 19, was the third son of the late E. A. Rucker, of Cudham Hall, and of Mrs. Rucker, now residing at "Rutherford," Melville Avenue, South Croydon. He was educated at St. Aubyn's, Rottingdean, and Charterhouse (Girdlestoneites), where he was a member of the Cricket XI in 1915 and 1916. He joined the R.A.F. in March, 1917, and had been at the front since November of the same year.

SHERLOCK.—Lt. C. E. Sherlock, R.A.F., who was killed while flying on Aug. 20th, was the younger son of Mrs. R. E. Sherlock, of Lethbridge, Alberta, Canada. He joined the 2nd Brigade, C.R., and came to England early in the spring of 1915. He was twice wounded in France. Last January he transferred to the R.F.C.

TALBOT.—Sec. Lt. Ralph Frederick Talbot, R.A.F., who was killed on Sept. 2nd, was the second son of Arthur Warburton Talbot, of Montreal, and formerly of Deal, and was aged 20. Educated at Sir Roger Manwood's School, Sandwich, he went to France from Canada with the 24th (Victoria) Rifles in 1915, and was wounded in 1916. He obtained a commission in the R.A.F. last August.

TROTTER.—Lt. Claud Handley Trotter, Alberta Regt., attd. R.A.F., who was accidentally killed whilst night-flying on Oct. 13th, was the youngest son of the Rev. J. Crawford Trotter and Mrs. Trotter, of Ardrahan Rectory, Co. Galway. He was 23 years of age.

WARE.—Capt. Denys C. Ware, M.M., R.A.F., who was killed in action on Sept. 20th, was the youngest son of G. S. Ware, St. Aubyn, Jersey.

The brief notice printed above records the death of yet another of the old-timers of aviation. Denys Charles Ware held Royal Aero Club Certificate No. 355, dated Oct. 29th, 1912, taken at Hendon. He was one of the few aviators who passed their tests on a monoplane, his mount being a Deperdussin, one of the best flying machines of the period, but tricky to fly, and anyone who took his ticket on a "Dep" was, *ipso facto*, a clever pilot.

After taking his certificate Denys Ware continued to devote himself to aviation, and spent his time, till the outbreak of war, at Hendon. He also endeavoured to build a machine of his own design, but never completed it. Early in the war, instead of waiting for a commission, he enlisted in the R.F.C., and won the Military Medal as a non-commissioned pilot. He spent long periods on active service, and finally broke down in health to such an extent that at one time he was on the point of being invalided out of the Service. However, he made a wonderful recovery and again returned to active service as a flight-commander. His personal gallantry and his good nature made him very popular with all who served under him, and he will be deeply regretted by many friends both in and out of the King's Service.—C.G.G.

WATERER.—Sec. Lt. Michael Anthony Waterer, R.E., attd. R.A.F., who died on Oct. 11th at a casualty clearing station from wounds received on Oct. 8th, was the younger son of Robert and Gertrude Waterer, of Elmside, Chertsey. He was 24 years of age.

WICKS.—Lt. George Viner Wicks, Aust. F.C., was killed whilst in Gloucester on Oct. 13th.

Engagements.

CHIDSON—DE BRUYN.—The engagement is announced between Lt. Montague Chidson, R.G.A. and R.A.F., only son of Mr. and Mrs. Henry A. Chidson, of 11, Sackville Street, Piccadilly, and 4, Matheson Road, W.14, and Marie Josephine Betty, only daughter of M. and Mme. G. A. L. M. E. de Bruyn, of Rotterdam.

COLLINS—RUSSELL.—An engagement is announced between Capt. Athol D. Collins, of the Worcester Regt., attd. R.A.F., son of D. George Collins, C.C., Shirley Park, Croydon, and Miss Agnes Russell, only daughter of Mrs. E. Russell, of Downham Market.

GARRARD—SMITH.—The engagement is announced of Lt. Cecil L. J. Garrard, Middlesex Regiment and R.A.F., eldest son

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of Mr. and Mrs. L. G. Garrard, Willesden, London, and Sarah (V.A.D., serving in Egypt), third daughter of the late William Jos. Smith, J.P., and of Mrs. Margaret Smith, 1, Bellvue Terrace, Johnshill, Waterford, Ireland.

JENKINS—WHITE.—The engagement is announced between Mr. G. Denham Jenkins, Hampshire Regt. and R.A.F., son of the late Capt. and Mrs. Walter Jenkins, of Bournemouth, and Alison Leonora, daughter of the late Mr. Harry Dow White, of Twickenham, and of Mrs. Charles Dew.

MARRIAGES.

BURRELL—BATALHA-REIS.—On Oct. 12th, at St. Mary Abbots, Kensington, Lt. Cedric Ian Burrell, R.E. attd. R.A.F., son of Mr. and Mrs. Burrell, of Newcastle, was married to Maria, second daughter of J. Batalha-Reis, Portuguese Minister in Russia, and of the late Mme. J. Batalha-Reis.

NELSON—THOMAS.—On Oct. 15th, at St. Anne's Church, Eastbourne, Lt. G. W. Nelson, Gordon Highrs. and R.A.F., eldest son of Maj. and Mrs. Nelson, Lothians and Border Horse, was married to Florence, second daughter of Mr. and Mrs. J. H. Thomas, "Lelant," Eastbourne, by the Rev. W. P. Jay.

WAIGHT—WEEKES.—On Oct. 11th, at St. Barnabas' Church, London, N.W., Lt. Leonard Waight, Int. Corps and R.A.F., second son of Mr. and Mrs. F. H. Waight, was married to Ruby, eldest daughter of Mrs. Weekes and the late Rev. R. Weekes, M.A., by the Rev. H. Hughes, B.A.

BIRTHS.

DE HAVILLAND.—On Oct. 17th, 1918, to Capt. and Mrs. G. de Havilland—a son.

HAGGAS.—On Oct. 14th, at Acomb Hall, York, to Amy, wife of Lt. W. R. Haggas, Loyal North Lancs. Regt. and R.A.F., of Oakworth Manor, Keighley, Yorks—a daughter.

HIGGINBOTHAM.—On Oct. 13th, at Willaston House, near Chester, Christian (*née* Catto), the wife of Captain H. C. Higginbotham, A. and S.H. and R.A.F., of a son.

AIR FORCE.

DEATHS.

BINGHAM.—Sec. Lt. the Hon. Gerald Bingham, R.A.F., who was killed in action on Oct. 8th, was the youngest son of the late Lord Clanmorris and of Maude Lady Clanmorris, Bangor Castle, Co. Down, Ireland.

BUCHANAN.—Lt. Arthur Noel Buchanan, R.A.F., who died of pneumonia on Oct. 14th, while on leave from the Front, was the second son of Sir John and Lady Buchanan, of Clareinch, Claremont, Cape Town. He was 33 years of age.

CLARKE.—Lt. Hubert W. Clarke, R.A.F., who was killed in action on Sept. 2nd, was the second son of Mr. and Mrs. A. E. Clarke, The Hurst, Mottingham, Kent. He was 19 years of age.

HERBERT.—Lt. Robert Stannard Herbert, R.A.F., who died abroad on Oct. 8th, shortly after a collision in the air, was educated at Bedford School. He had only just joined his squadron, and had been offered an instructorship in England, but made special application for active service abroad. He was 19 years of age, and son of Mr. and Mrs. Leonard Herbert, of Argyll Mansions, W.14.

LLOYD.—Sec. Lt. Robert Aubrey Hastings Lloyd, R.A.F., who died on Oct. 14th at a casualty clearing station, of wounds received in action on Oct. 10th, was the youngest son of Mr. and Mrs. E. W. M. Lloyd, Hartford House, Hartley Wintney, Hants. He was 18 years of age.

SEDGWICK.—Capt. Francis Balfour Sedgwick, R.A.F., who was accidentally killed whilst flying on Oct. 18th, was the younger son of the late Professor Adam Sedgwick and Mrs. Sedgwick, 4, Alfred Place, S.W. He was 22 years of age.

YOUNG.—Lt. Gavin Ferguson Young, R.A.F., who was reported missing on Sept. 2nd, is now reported killed in action or died of wounds. He was the second son of Frank Young, 45, Gwendolen Avenue, Putney. He was 19 years of age.

ENGAGEMENTS.

MARIGOLD—MATTHEY.—The marriage arranged between Lt. J. E. Marigold, R.A.F., and Joyce Matthey will take place on Thursday, Nov. 7th, at St. James's, Piccadilly, at 2.30. All friends will be welcome at the church.

MOSER—MOBERLY.—A marriage has been arranged and will take place at the Church of the Annunciation, Bryanston Street, on Nov. 5th, at 10, between Maj. George Moser, R.A.F., son of Mr. George Moser, of Kendal, Westmorland, and Gladys, younger daughter of Mr. W. H. Moberly, of Southampton. Friends will be welcome at the church.

MARRIAGES.

AFFLECK—HILL.—On Oct. 17th, at St. Cuthbert's, Darlington, Capt. J. Colin Campbell Affleck, R.A.F., son of the late J. Murray Affleck and Mrs. Affleck, High Wycombe, was married to Sibyl, daughter of Dr. Eustace Hill, O.B.E., and Mrs. Hill, of Darlington, by the Rev. J. P. Pulliblank, M.A.

GREEVES—GARROD.—On Saturday, Oct. 12th, at St. Stephen's Hampstead, Lt. Arthur Owen Greeves, R.A.F., only son of Mr. and Mrs. H. E. Greeves, late of Hampstead, was married to May Gladys, only child of Mr. and Mrs. G. H. Garrod, of Hampstead, by the Rev. H. N. Bate, M.A., Vicar of Christ Church, Lancaster Gate, assisted by the Ven. A. F. Sharpe, M.A., vicar of the parish.

BIRTHS.

MEADE.—On Oct. 13th, at Claydene, Edenbridge, the wife of Capt. W. A. Meade, R.A.F., of a daughter.

ROBERTS.—On Oct. 14th, at 51, Westbourne Road, Sheffield, to Mary, the wife of Maj. E. G. L. Roberts, R.A.F.—a son.

* * *

Sec. Lt. M. J. Sheehan, R.A.F., has been missing since Oct. 1st. His father, Capt. D. D. Sheehan, M.P., has, so far, had no news of him.

FOREIGN COMMUNIQUES.

FRANCE.

Oct. 14th.—The Lt. Bozon-Verdoraz brought down on Oct. 9th his 10th and 11th enemy aeroplanes. The same day Adjt. Berthelet brought down his 10th and 11th machines (1 balloon and 10 aeroplanes).

Oct. 16th.—During Oct. 14th seven enemy machines were brought down. Four balloons were brought down in flames. During the night, in spite of the unfavourable conditions of the weather, our bombing machines were able to drop six tons of bombs on the very important railway stations at Hirson, Vervins, Marles, St. Montoornet.

Oct. 19th.—On Oct. 18th the activity of the German air squadrons being chiefly concentrated in the region from the Aisne to the Argonne, our aeroplane formations made for that region with the object of assuring the safety of the observation aeroplanes, the balloons, and the troops on the ground. Numerous aerial engagements were fought in this zone, in the course of which 13 German aeroplanes were shot down or fell driven out of control in their lines. In addition, on the Lorraine front our pilots attacked the captive balloons of La Bourdonnaye and that of Avricourt just as they were going up, and set fire to them.

Observation aeroplanes, protected by chaser aeroplanes, carried out deep reconnaissances over the enemy's zone and brought back useful information about the concentrations of German troops north of La Fère and of the Aisne.

The railway stations of Hirson, Liart, Rozoy-sur-Serre, Montcornét, and Vervins, where important troop movements were reported, received several visits from our squadrons. Over 14 tons of projectiles were utilised with excellent results, and violent explosions and fires were observed in the railway stations of Hirson and Rozoy as the result of the bombardment.

On Oct. 18th Sous-Lt. Gugou shot down his 10th German aeroplane.

ITALY.

Oct. 19th.—Along the remainder of the front desultory artillery actions and a few aeroplane flights hindered by the adverse atmospheric conditions.

U.S.A.

Oct. 19th.—Yesterday our pursuit squadrons on the (Meuse) front of the First Army were engaged in 25 combats, in which 17 enemy machines were shot down. Our bombing units dropped four and one-half tons of bombs on Buzancy, Bayonville, and Rémonville.

BELGIUM.

Oct. 15th.—Last night our aviators successfully bombarded the enemy lines of communication. To-day aerial activity was hampered by atmospheric conditions.

Oct. 18th.—On Oct. 15th Sous-Lt. Haegelin set fire to a captive balloon. This is the 20th victory of this pilot—12 balloons and eight aeroplanes.

Oct. 21st.—During the night of October 19th-20th an enemy aeroplane was brought down by our machine-guns.

SERVIA.

Oct. 14th.—One German aeroplane has been brought down behind our lines by rifle fire.

Oct. 17th.—The enemy's aeroplanes are bombing Nish and Prokouplye.

INTERNED PRISONERS.

The "Times" correspondent writes that the following British officers arrived at The Hague on Oct. 12th from Germany for internment:—

Geen, Lt. C., Lond. R., attd. R.A.F.; Tooke, Capt. D. C., R.A.F.; Wingfield, Lt. E. H., R.A.F.

A FRENCH ACE.

The "Petit Parisien" states that on Oct. 6th Lt. Fonck brought down four enemy machines in twenty minutes. This is the first time he has achieved such a result in the course of a single flight. He now has 70 enemy machines officially registered to his credit, and according to Reuter's correspondent his total score of victories is 109.

WANTED A JOB.

Does any reader of The Aeroplane happen to want a thoroughly reliable man and wife to take up positions of trust? The man is an ex-Staff-Serjt., A.S.C. (Mechanical), with an excellent Army record, and was concerned with aviation in its very early days. He would be useful in looking after the machinery, cars, and so forth, of an estate, and his wife could undertake housekeeping. Anybody interested is invited to write to the Editor, The Aeroplane, marking his reply "G.S."

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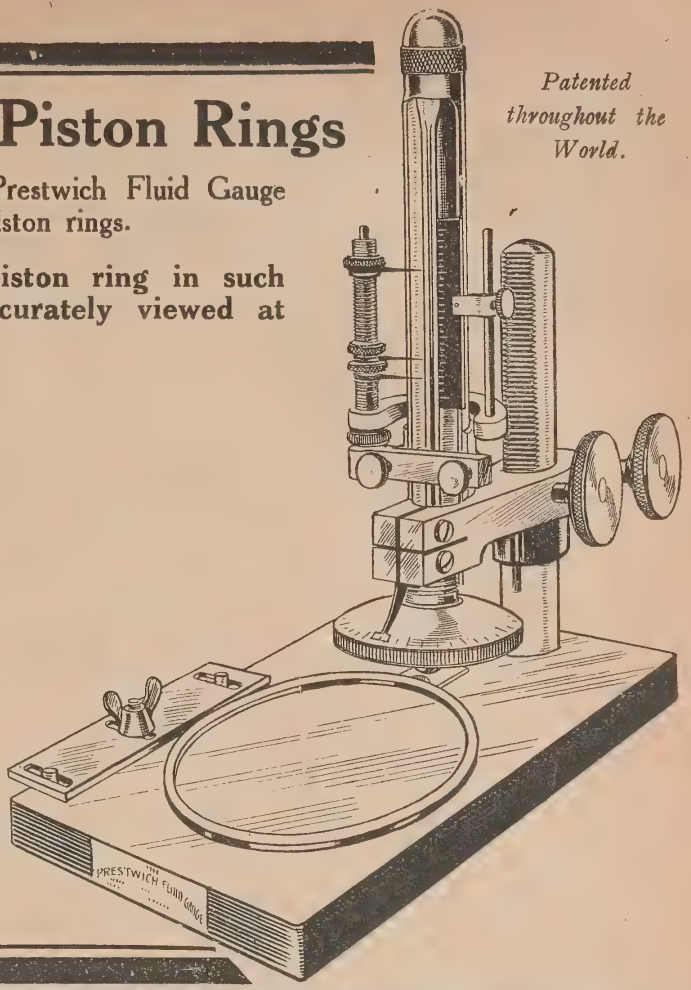
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SOME MORE BOOKS TO READ.

AEROPLANES AND AERO-ENGINES.

There are not many magic books, and your list would probably differ materially from mine. By "magic" I mean books having in them that peculiar essence or quality which so orders it that, when you open them, you are utterly shut off from the importunity and worry of the common day, and a mimic drama, well-remembered and beloved, is set in motion before the eye of your mind, which revels, relaxed and well content.

Certain of this happy refuge, I can always turn to the "Cyrano de Bergerac" of Rostand, "Kim," the "Three Musketeers," of course; and a never-failing magic lurks in those opening lines of Sappho: "Regardez-moi, voyons. . . . J'aime la couleur de vos yeux. . . . Comment vous appelez-vous?" And no one who had ever known dear Sussex, true Eden to her lovers, could read, unsuspecting of the spell evoked, that jolly chronicle of her roads and byways: "The Four Men," a book so potent in charm that I broke through the rule of a life-time and thanked Mr. Belloc, the writer, for it.

I remember where the devil, full of joy at having cheated St. Dunstan, as he thought—"and at being thus able to ruin our land, which, if he could ever accomplish it, would involve the total destruction and defacement of the whole world, flew off through the air southwards, flapping his great wings. So that all the People of the Weald thought it was an aeroplane, of which instruments they are delighted observers; and many came out to watch him as he flew, and some were ready to tell others what kind of aeroplane he was, and such-like falsehoods." Just as that young man whom I saw not so long ago assuring his trustful Chloe that the sedate Maurice Farman which was gambolling decorously overhead was a new and horrifically improved S.P.A.D.!

For the guidance of such an one, "Avion" has written a simple introduction to the study of flying, called "Aeroplanes and Aero-Engines," which is sold by C. Arthur Pearson, Ltd., at half-a-crown. Shorn of unnecessary and puzzling technicality, the little book constitutes an excellent primer. Precisely the thing to hand to inquiring friends who want to know what makes the thing stick up there, and schoolboys who put questions which require thought to answer.

Within the limitations imposed by one hundred and fifty odd pages, the field has been sufficiently covered to give the man-in-the-street an adequate working knowledge of the underlying principles of flying, the construction and design of that masterly compromise the modern aeroplane, and the working of accepted types of aero-engines.

In general, the rotary and the radial engine combine to form a sort of *pons asinorum* over which the writers of handbooks of this nature seem unable to pass; even if they themselves have a clear grasp of the functioning of both types (which does not always seem to be the case), it is not possible for them to give an explanation of sufficient clarity to elucidate the cycle of motion, which is so puzzling to many inquirers. The wretched reader becomes convinced that the metallic octopus described is too much for him. For this reason the excellent chapters in the work under review are particularly to be commended.

The preliminary chapter, "Why an Aeroplane Flies," with some notes on streamlining, is calculated to enlist attention at the outset, and disperse many of those weird and wonderful popular misapprehensions which obtain in the minds of so many folk. Stability, control, rigging and structure are severally dealt with, and the illustrations which accompany the text are simple and easily understood.

It was really somewhat of an undertaking, this endeavour to treat in one small handbook of two subjects having so many collaterals, but the author, writing always acceptably of accepted practice, may congratulate himself on having done so in a way such as should render his book a *vade mecum* for everybody, who, as yet, uninstructed as to the mysteries of aviation, seeks to know more, and is not incapable of a mild mental effort to that end.

A dictionary of flying terms, some notes on the present scope and future possibilities of aeroplanes in war and commerce, some hints on the management of engines, and many other miscellanea on which I have not space to dwell, make the book a sound investment. (Commendation should be bestowed in passing on the chapter concerning the merits and conflicting claims of the various types of engines; this is handled in a manner generally lacking from elementary works, and bespeaks some intimacy of knowledge.)

I suppose we must blame the times for the fact that the paper used is of the sort that would serve best (as Herrick puts it) to "make loose gowns for mackerel."—R. H. B.

ELEMENTARY MATHEMATICS AND WIRELESS TELEGRAPHY.

To drive away dull care, go and see an old-style melodrama played in a garrison town.

Plush tip-up stalls at "All for a Good Time—or: Susie's One Side-slip," for one and tenpence seemed good value. The house was jammed from cellar to roof, and the surprising number of infants among the audience dressed in red plush seemed to suggest a reason for the tip-up seats being mostly covered with coarse sacking. A steady curtain-fire of orange-peel, programmes and head-gear fell from the gods above upon the luckless stalls, who endeavoured to look oblivious. The drop-curtain was plastered with advice as to where to go for hot tripe or engagement rings, and the rise of the curtain was greeted with a furious fusillade of cracking nuts.

The heroine, more sinned against than sinning, won the great heart of the audience from the start. At the more moving crises in her career an enormous lady in sequins by me leaned heavily on my shoulder, dropping copious tears; and I smoked furiously, to neutralise the flavour of certain unwashen agriculturalists in the vicinity.

At the great scene of the play all grew deathly still, save for the musical note of a youth on my other side sucking an orange, his goggling eyes fixed on the trusting heroine, about to leave her child in the lonely hut—little knowing that the villain prowled outside with a gold-tipped cigarette waiting to kidnap the innocent morsel.

"Tike the biby wif' yer, Missie!" cried an anguished feminine voice, and the stentorian tones of the commissionaire spoke for "order—there!"

Not a nut was heard, enthralled we watched the comic man foil the disgusted villain, and when the heroine proclaimed that "Every woman has a right to be a Mother!" salvoes of applause broke from every quarter. At this juncture a lady who had wined too well was removed from the pit, to the accompaniment of a sound as of the tearing up of benches.

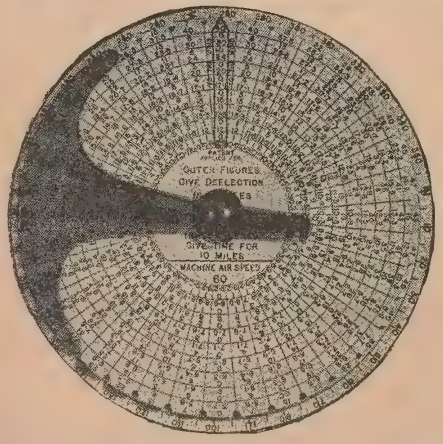
The comic man—

[Lector. You prattle very prettily, but may one ask if you are ever coming to the book?

[Auctor. Be patient, do. I was just going to. If you want brevity, try the Want ads!]

—a being with an air of chronic depression.

The comic man, told us how he had cheered the last hours of a dying friend by reading to him choice excerpts from a book dealing with the differential calculus, which only seemed to hasten the end.



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Which reminds me that the calculus, logarithms, vectors, and trigonometry, are dealt with very painstakingly in a book under my hand: "A Short Course in Elementary Mathematics and the application to Wireless Telegraphy," by S. J. Willis (The Wireless Press, Ltd., 3s. 6d. net).

The volume strikes a happy medium, in so far as it avoids the Scylla of too elementary treatment on the one hand, and, on the other, the Charybdis of inappropriately advanced thought. Algebraical principles are presented afresh, and a useful chapter on the use of the slide-rule is included.

Following this there is a chapter on geometry, the examples in all cases having a practical application, and trigonometry is followed in turn by vectors. At the end of the volume are some handy tables on constants, and the concluding chapter presents an adequate treatment of the use of squared paper, the lucidity of which should enable the student to realise the considerable utility of the various curves with which every book on wireless theory is necessarily filled.

Examples and problems are presented at the various stages in order that the student may test his progress, and the matter dealt with is everywhere elucidated by diagrams. Those actually engaged in radiotelegraphy, alike with those who aspire to this end, should find the book a real aid.

Not the least of its merits is a complete absence of the regrettable sensationalism and harping on sex matters which mars so many present-day productions.—R. H.B.

THE MOTOR TRANSPORT YEAR-BOOK.

Did I ever tell you about my encounter with the confidence men? It is to be seen from your expression of delighted anticipation that I did not!

It was many years ago, in the city of Boston, that little grey replica of London. I was very young, and I had 50 dollars in my pocket, and a vacation fortnight to spend them in. While I sauntered complacently, a young gentleman of frank and engaging countenance came up, and asked if I could direct him to the Public Library. We fell, naturally, into conversation. He struck me as rather an ingenuous lad, but nice. He was on vacation, too. Nothing would do but that he must stand treat for everything. This he did modestly, and without ostentation. My heart warmed to the unknown, and even now I blush to think that I warned him, with the fatherly indulgence that one-and-twenty manifests to those still in their teens—against playing cards with strangers.

On the deserted Common (by this time we were blood-brothers) we encountered a long and gangling youth, with straw-coloured hair and watery blue eyes. He was from the South, and he babbled of green fields, and the horses he had come up to sell.

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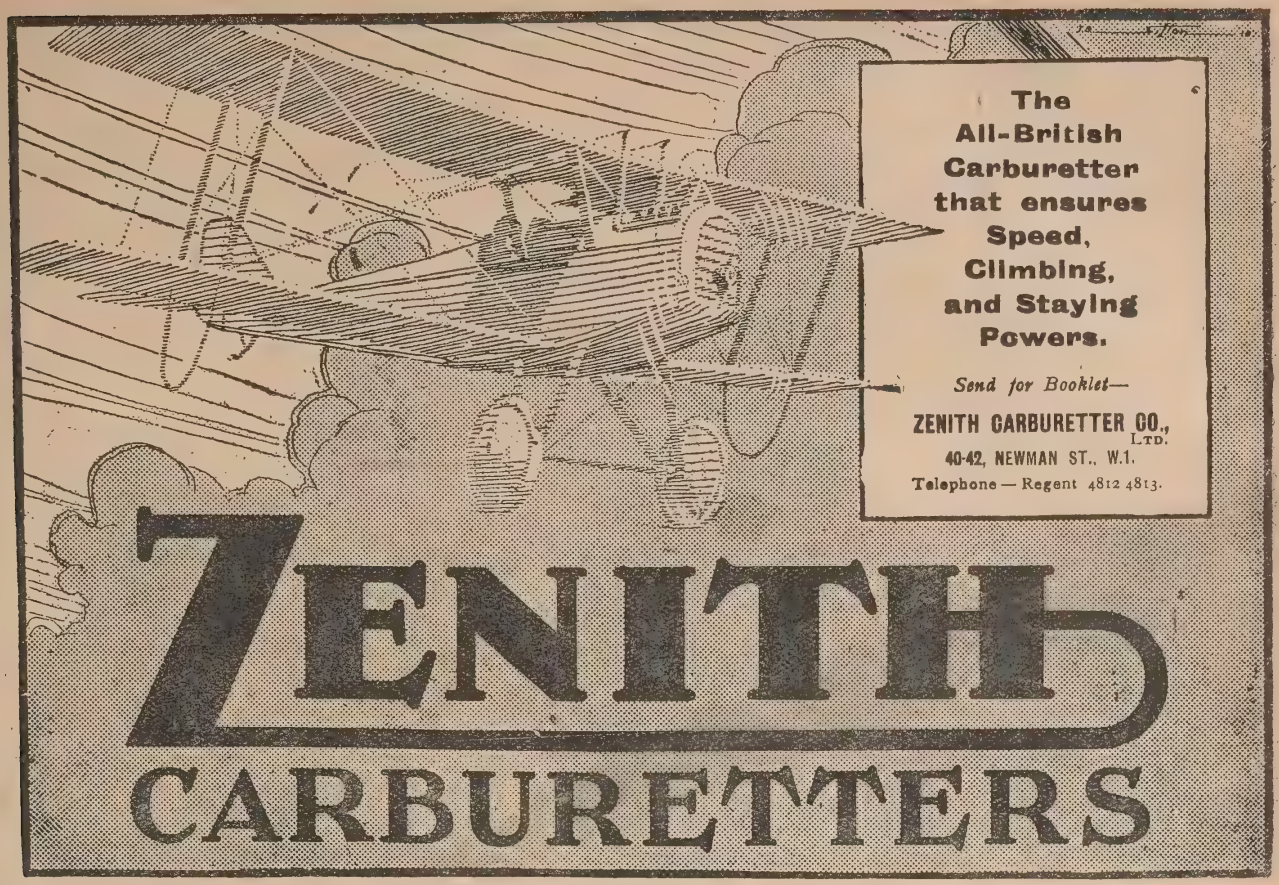
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He assured us of his intention to have "One rip-razzlin' good time," and exhibited a roll of bills in high denominations that would have choked one of his quadrupeds. The shy youth and I warned him in chorus of the wicked ways of metropolitan folk. He, bucolically, insisted on a little game of odd or even. (Have *you*, then, never been had? Your time may come, you know!) I took no hand in this. The shy youth won, he won tremendously; and ever he feverishly handed the winnings to me "to take care of." I put them in a trouser-pocket. He was a consummate actor, the shy youth. The gaming fever spread like fire; I ceded to the whispered counsel of my new friend, and "took a hand." For a while all was well, then the luck changed, and at the instant my little pocket-book was empty—the shy boy—his jaw hanging in sudden terror, and his eyes protruding, spotted a minion of the law—(or said he did)—and fled, giving a hasty appointment. The man from the South strolled off unruffled.

It took me just sixty seconds to see the kind of ass I had been, and then I trailed the Southerner, proposing to him that I was not sure about the bona fides of the game, and intended to lay information to the police. He deferred, and handed me ten dollars "to help me out." After that he was mine, and I even made him change one of those brand-new hundred dollar bills that were his bait, shaking hands fervently with him at the leave-taking, and apologising for having for an instant suspected that he was privy to the business. When I added up at home I was five dollars in! *And* the experience. . . .

But there is no chance of your being "sold a pup" if, needing something of this nature, you order the "Motor Transport Year-Book" (Electrical Press, Ltd. 12s. 6d. net). The fat four-hundred page volume may be said to constitute a reliable financial, statistical and commercial work of reference for British motor transport undertakings, and their many offshoots.

No less than 395 companies and corporations engaged in the motor transport business are listed, and there is an index of 351 motor vehicle manufacturing concerns. A brief history of the growth of motor transport up to its arrested development at the outset of war is followed by a review of "The Omnibus Position in 1918," and there are informative chapters on the constitution and powers of the Road Board, wherein are included particulars of the work of road construction and improvement after the war, as dealt with by the Reconstruction Committee. War-time restrictions as to petrol and lighting are set out in full, also lists of periodicals devoted to motoring and the motor industry. There is a useful table of the electric supply and gas-filling stations in the United Kingdom.

A directory section contains the names of more than 2,000 direc-

W. G. TARRANT.

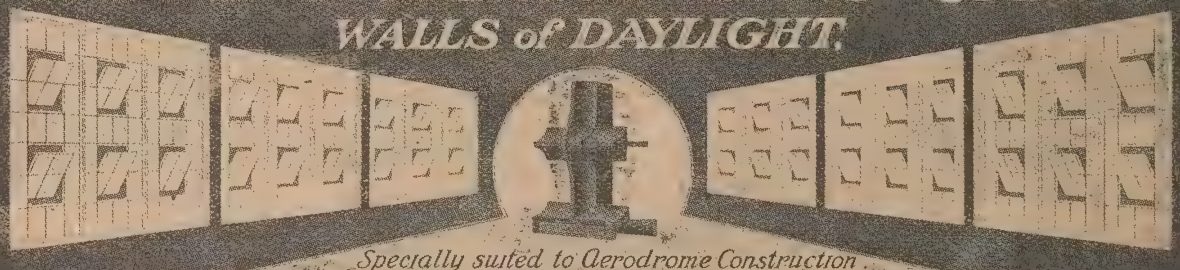
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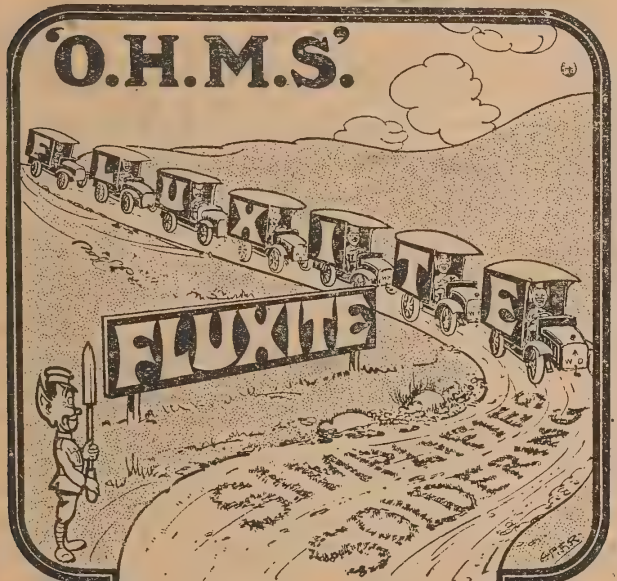
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tors and officials connected with the industry, and there is also a useful geographical index which gives the names of motor transport companies serving the districts indicated.

It is worthy of note that the industries listed are capitalised at £76,000,000. The index of trade names is a novel feature which should prove of utility. The book should certainly be of considerable assistance to those who require a handy vade-mecum of the motor industry in Great Britain.—R. H. B.

FORGINGS AND CASTINGS ORDER.

The Minister of Munitions has issued an Order dated Oct. 18th providing that producers of Ferrous Forgings, Drop Forgings or Castings shall furnish such particulars as are required of output, plant and workpeople employed and of orders and contracts to the Controller of Forgings and Castings, Ministry of Munitions, 8, Northumberland Avenue, W.C.2.

A WYCOMBE WHIST DRIVE.

The staff and employees of Wycombe Aircraft Constructors, Ltd., held a very successful whist drive and dance at the Town Hall, High Wycombe, Oct. 15th.

The prizes were distributed by Mr. F. H. Payne (Managing Director), who was accompanied by Mr. T. E. Ritchie (General Manager), Mr. T. Kemp-Walton (Secretary), and Mr. D. Stephenson.

Mr. Payne congratulated Mr. H. E. Richards and those who had assisted him in the organisation on the great success of the gathering, and hoped that it was only the beginning of a series of similar gatherings.

AERIAL AMBULANCES.

Reuter's correspondent writes as follows from New York on Sept. 26th :—

The United States Division of Military Aeronautics has authorised the use of ambulance planes at all aviation fields in the country after the successful operation of the first of these emergency air carriers in a southern flying field. The advantage of the aeroplane is that it can reach scenes of accidents, regardless of the locality of poor roads, and affords the occupant a smooth and comfortable trip. The standard training plane used for the new aeroplane ambulance, with the rear cockpit cleared and enlarged sufficiently, is fitted with a combination of folding seats that will allow the injured man to rest easily; he is strapped in a slightly propped-up position with his head toward the pilot and his feet and legs extending into the fuselage.

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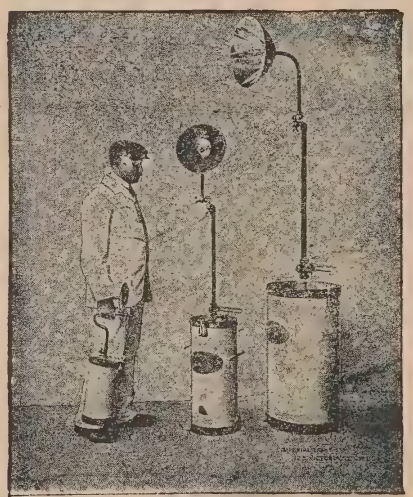
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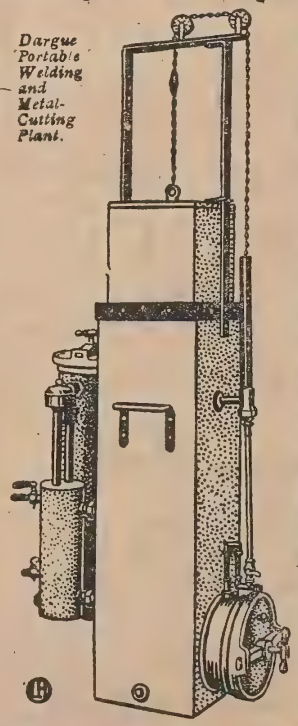


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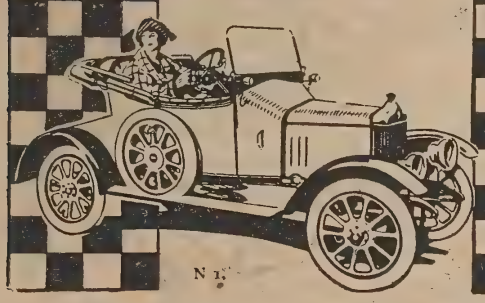
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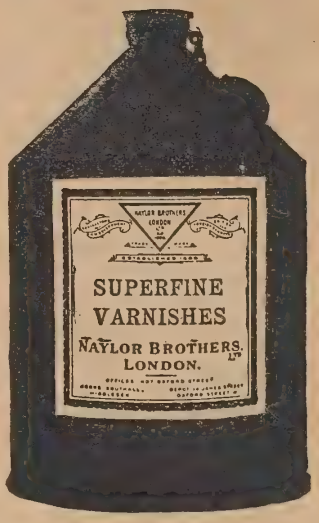
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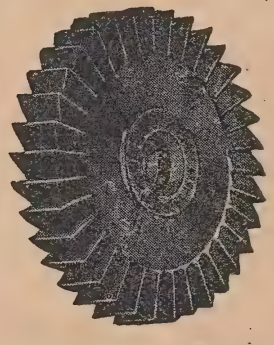
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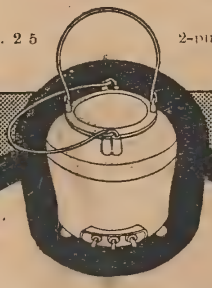
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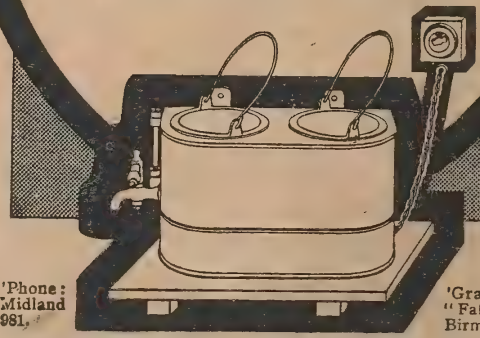
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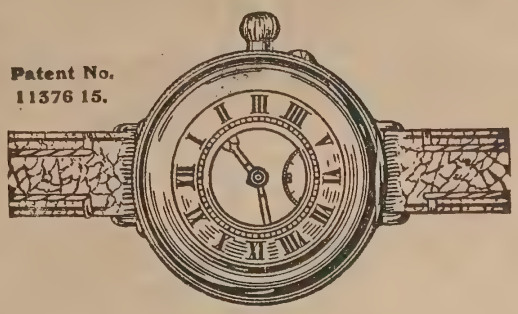


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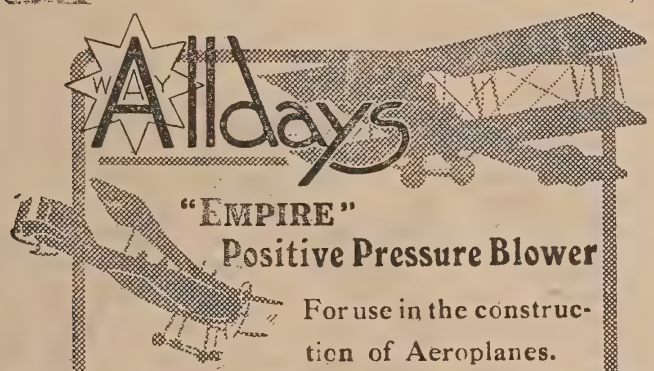
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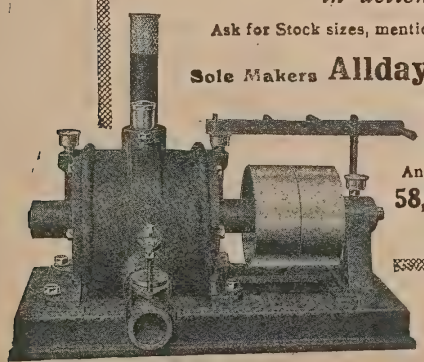
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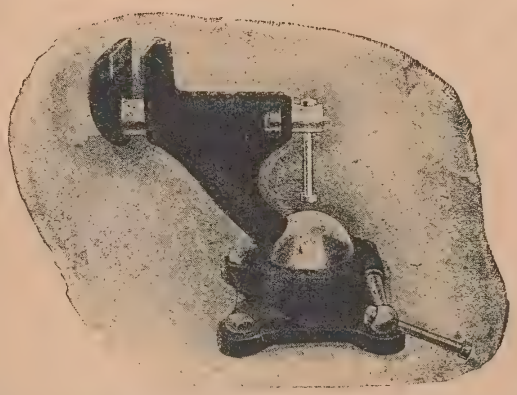
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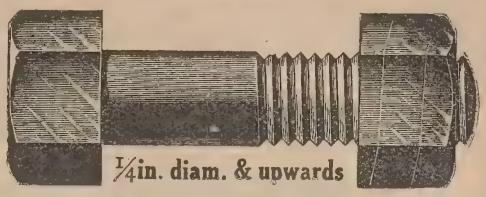
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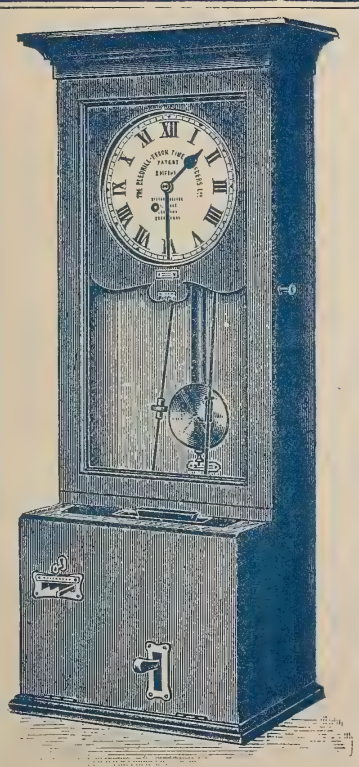


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THE AEROPLANE

Edited by C. G. Grey

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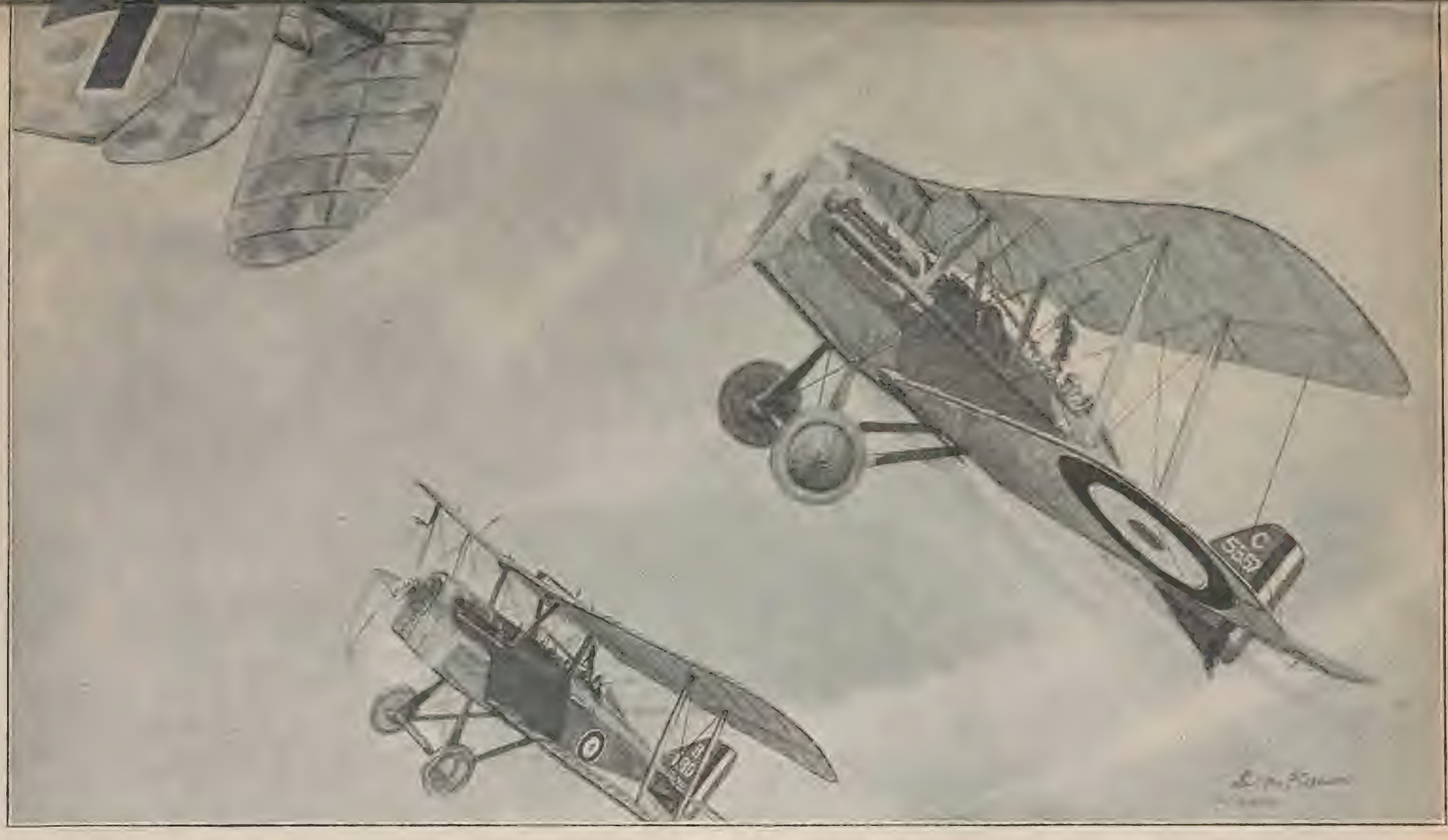
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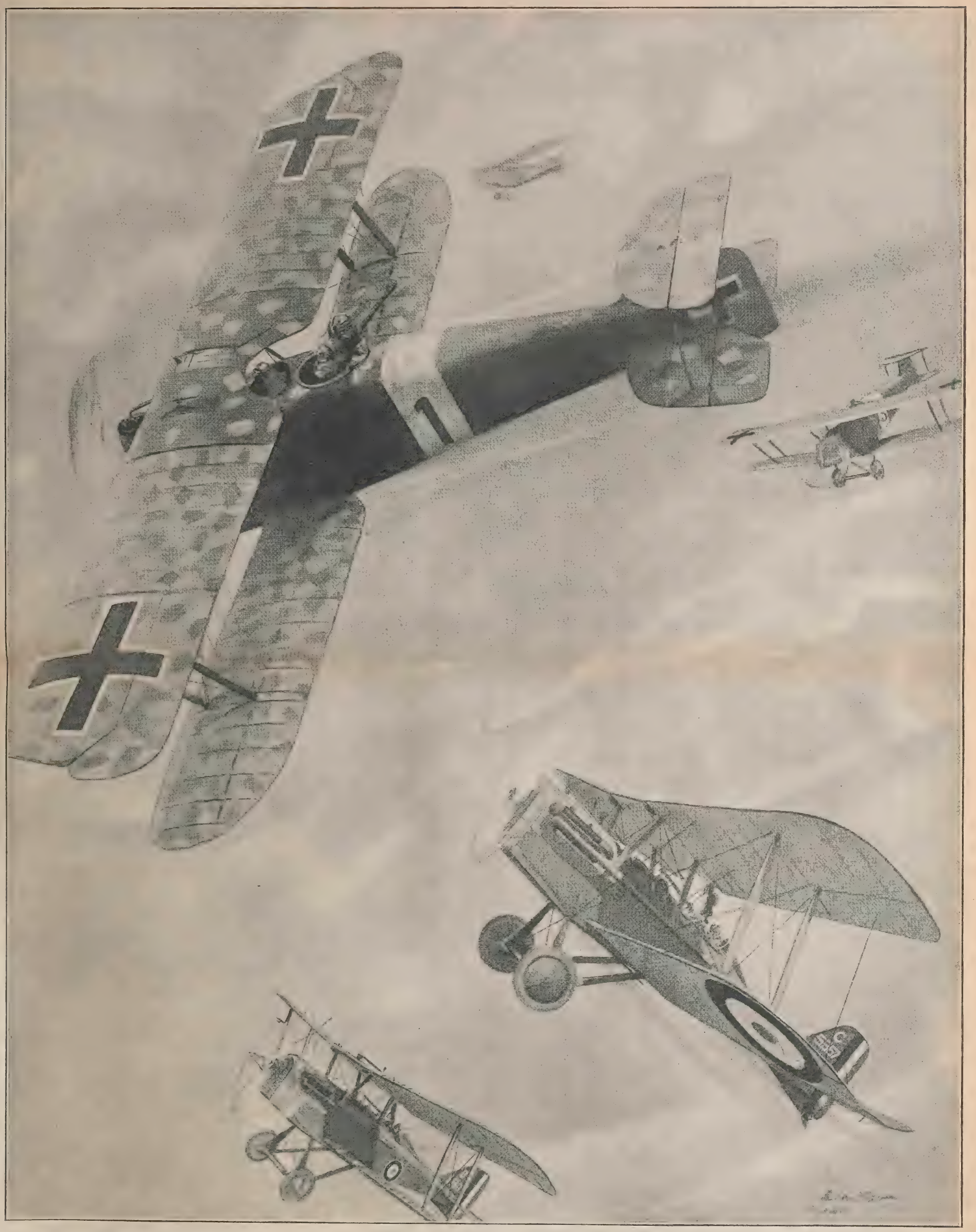
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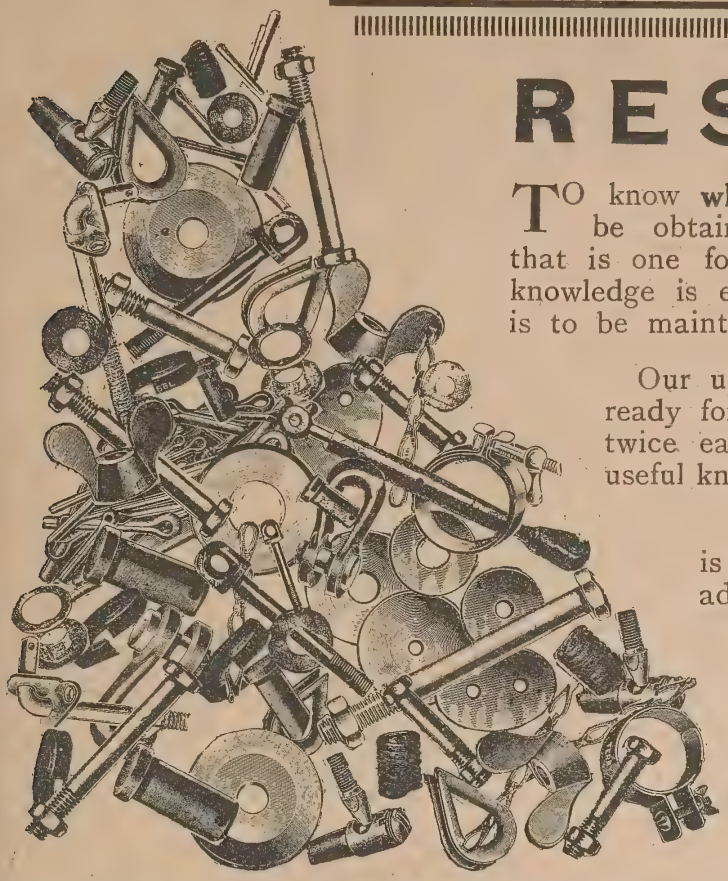


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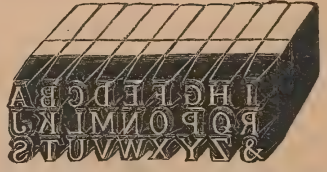
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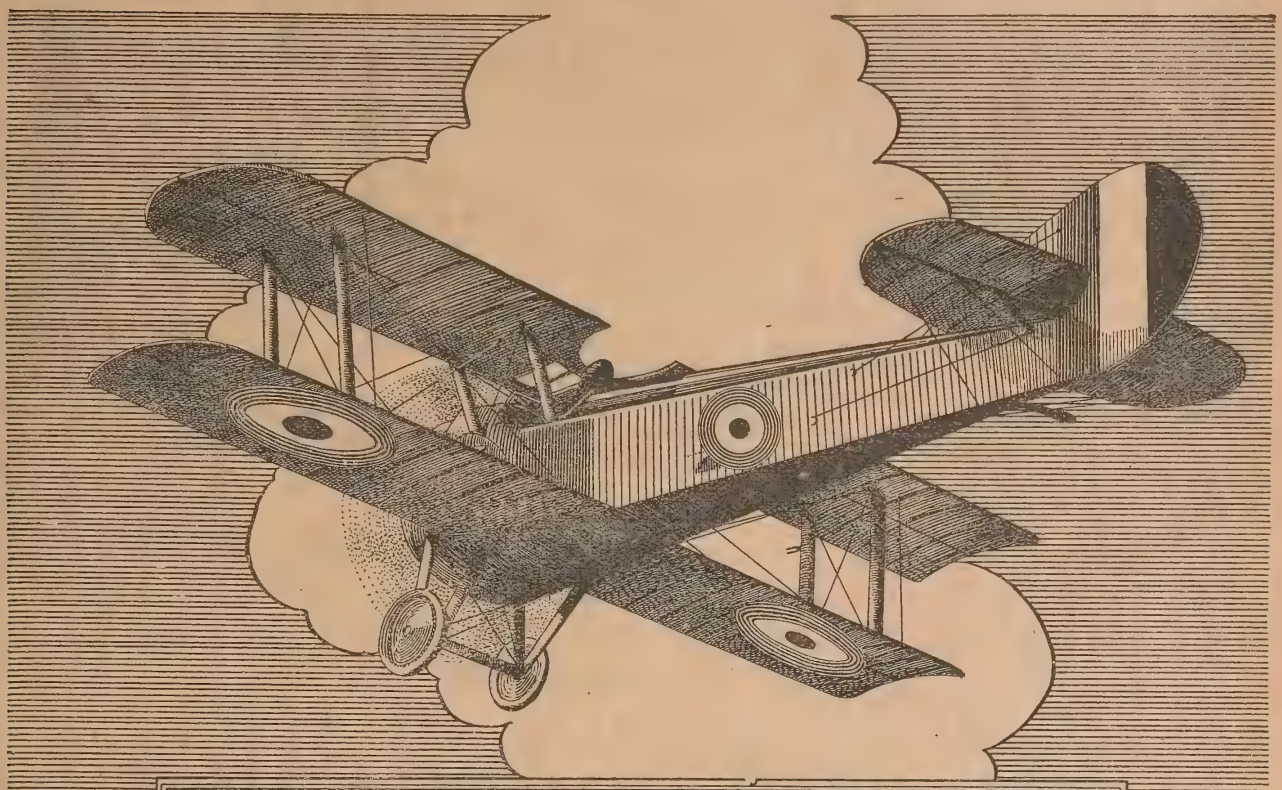


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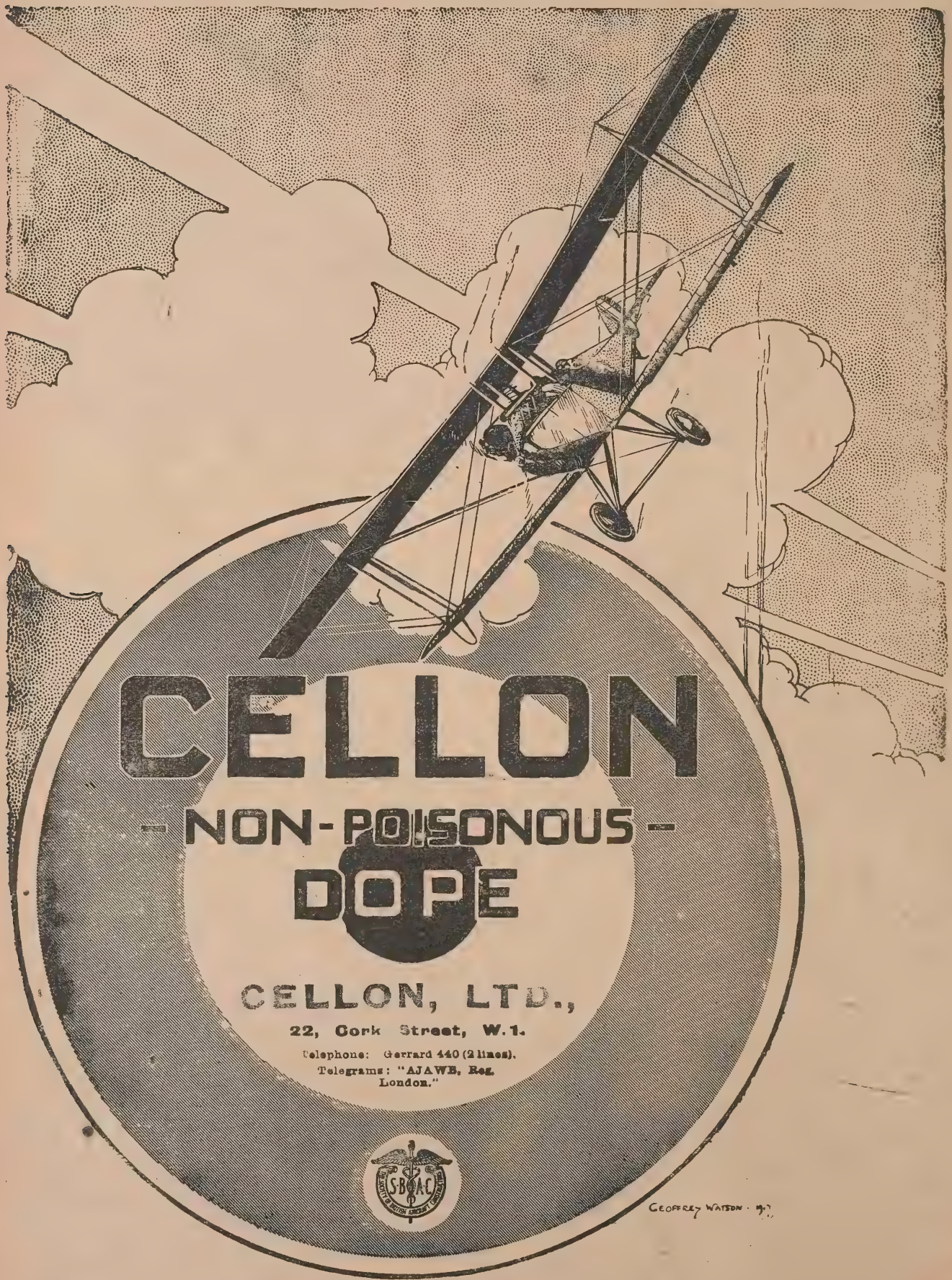
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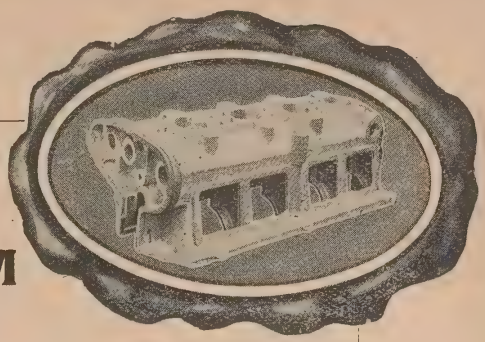
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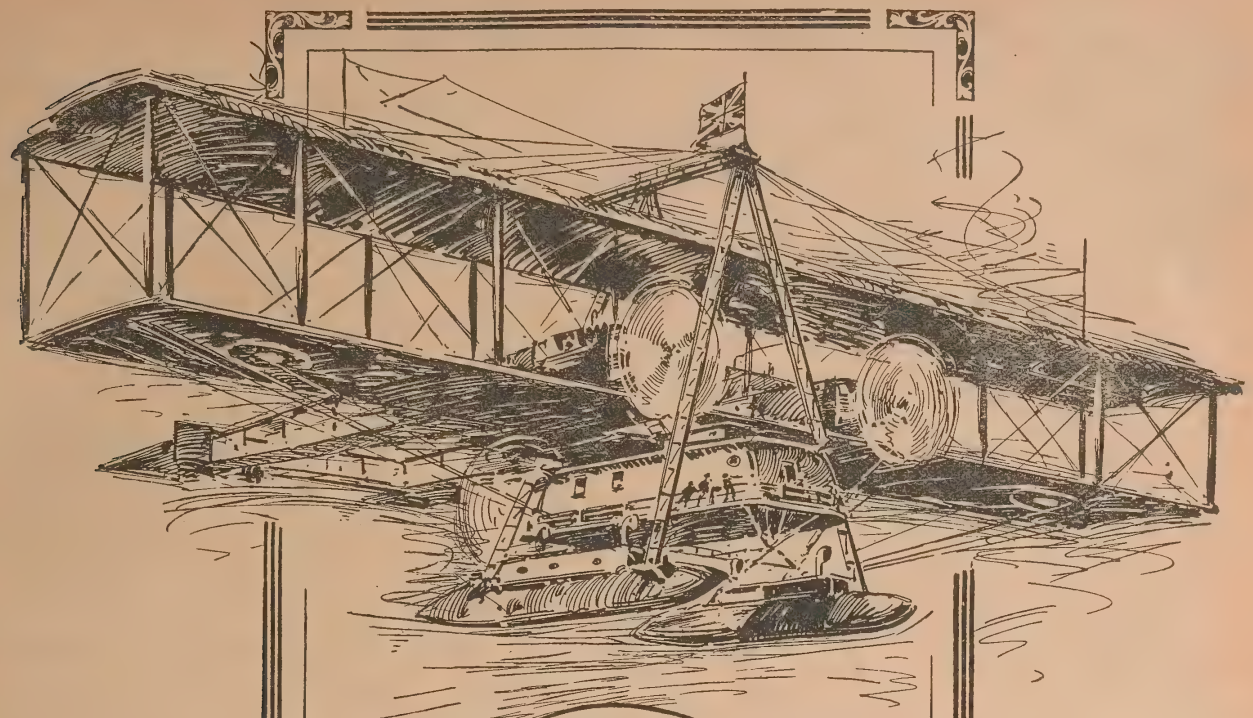
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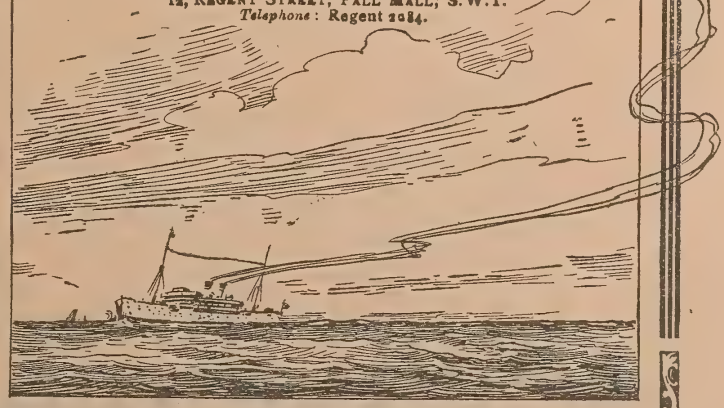

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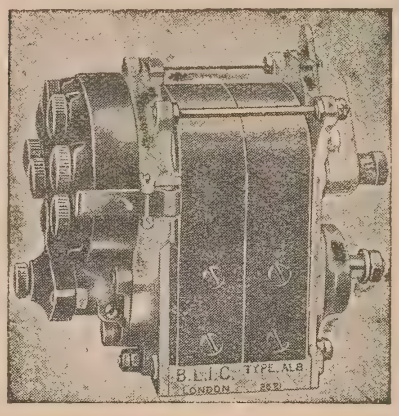


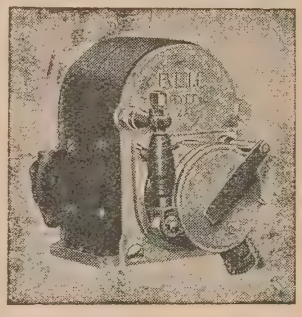
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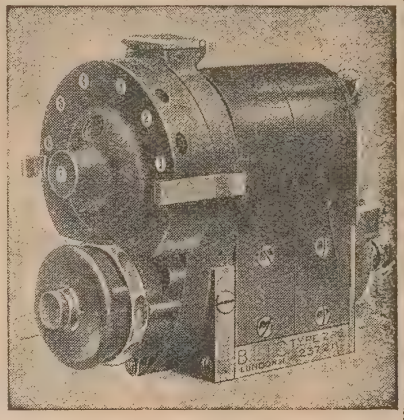
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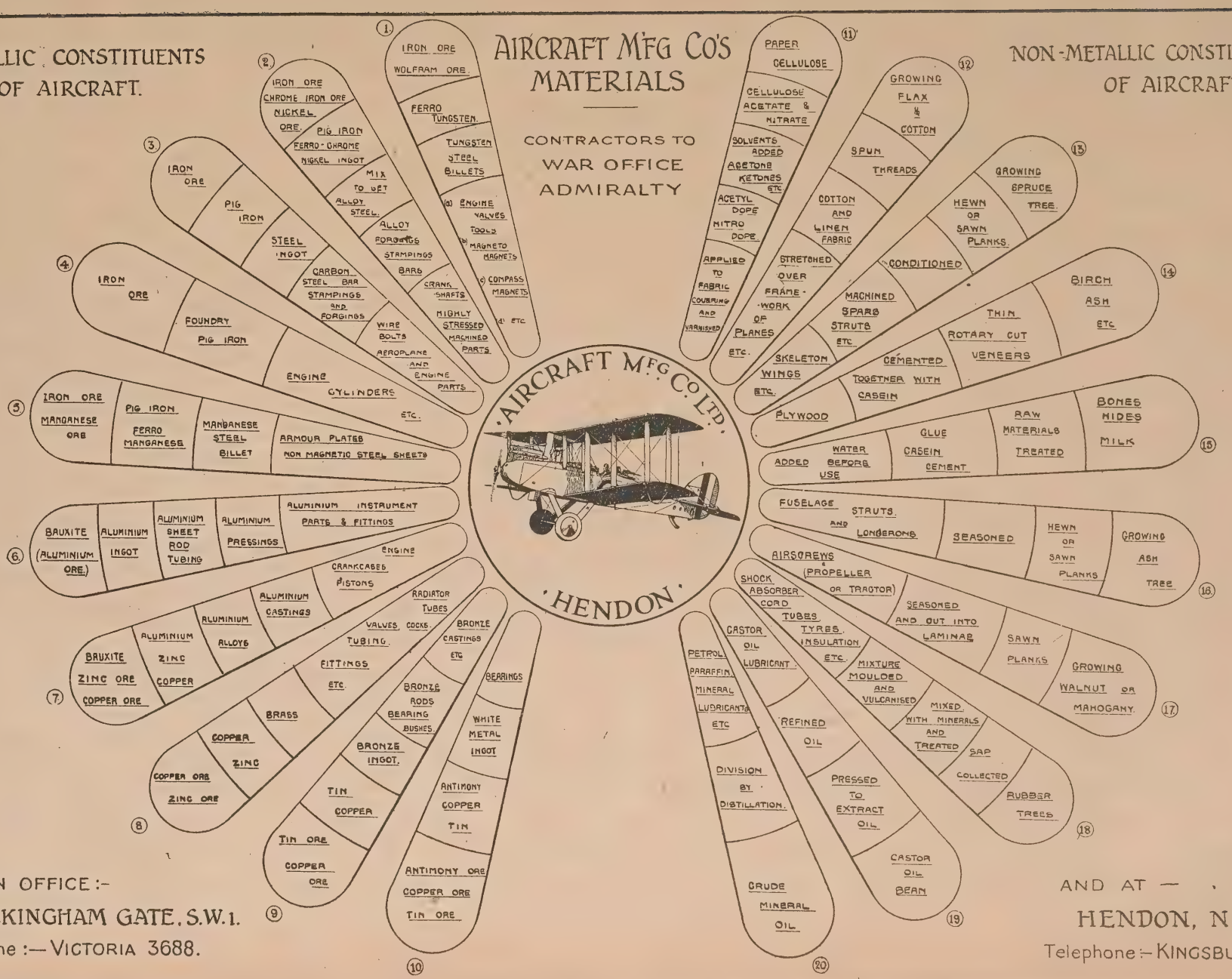
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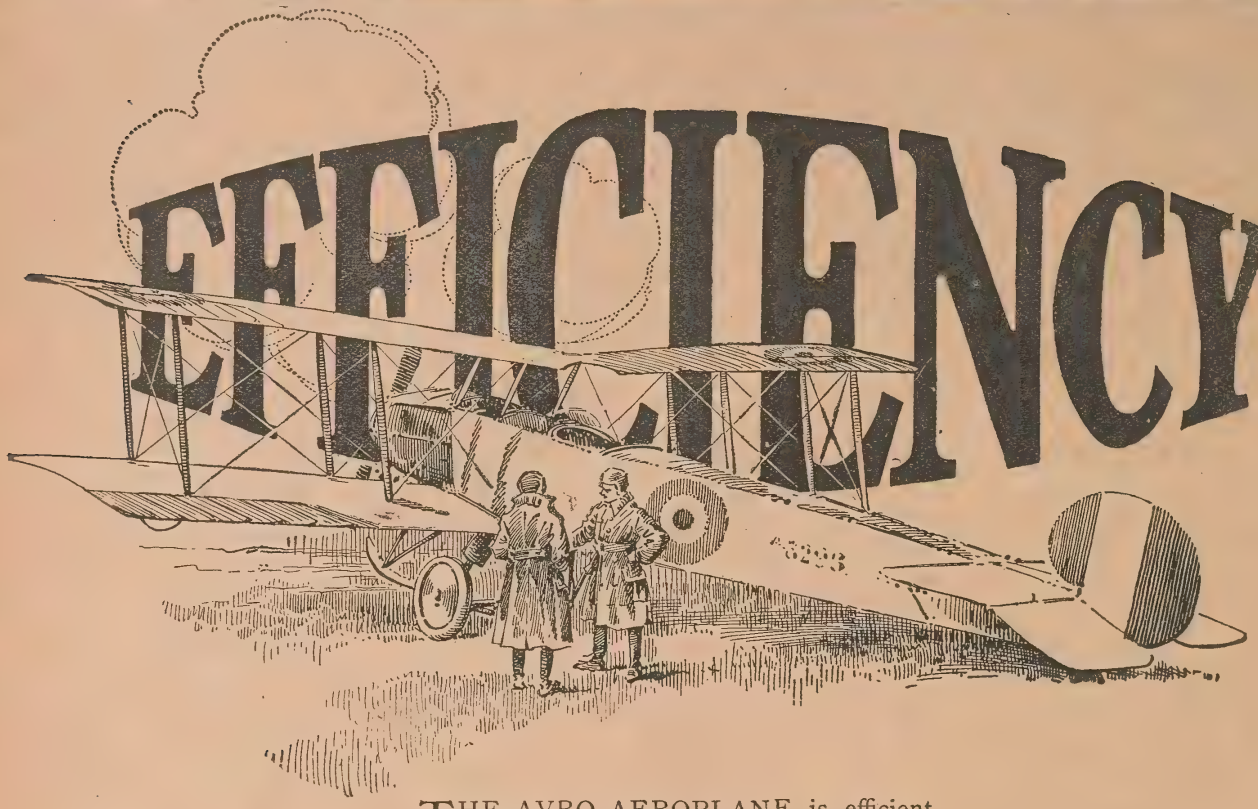
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ON SOME MORE ALLOTMENTS ON PARNASSUS.

At intervals it strikes one that it is only fair to the long-suffering readers of this paper to give them a rest from the alternating current of Jeremiads and Phillippics which one has felt it to be one's unpleasant duty to inflict on them for the duration of the war, in the hopes that the said current may by sheer persistence operate on the official brain as a species of mild electro-massage. Once in a while these rests have taken the form of a soothing-mixture of pure narrative mixed with other people's jokes. But some months ago new ingredients were discovered, in the form of the poetic efforts of various and sundry people concerned with the Flying Services.

It was scarcely possible to call most of these efforts genuine poetry, though some of them got very near it. They seemed to be of the nature of the amateur cultivation of allotments on the foot-hills of Parnassus rather than the achievement of the fully-fledged gardener on those classic heights. Hence the title.

The idea seemed to meet with approval, and the result was a deluge of verses, grave and gay, good, bad, and indifferent—mostly the two latter—and some damned bad. But out of the lot a number stood out as being too good to be lost to posterity, so one presents them herewith. One does not pretend that they are faultless as verse, let alone as poetry, but they are the genuine article, written by the men—and women—who know, and so they reflect accurately the genuine feelings of the people who do the work.

To this extent they may be highly educative to those who sit in High Places and direct the work to be done without having time to study the details of *how* it is done. One notices over and over again that same feeling of amused boredom with the various jobs of the various writers which carries the British fighting man—whether on sea, on earth or in the air—further than the wildest enthusiasm or the most rigid discipline will carry the men of any other nation—except the French, from whom the characteristic has been inherited. The Frenchman is never so sure of success as when he remarks resignedly, *"Toujours l'Administration!"* and sets about making the best of a bad job in his own effective way.

The French, like ourselves, are winning this war *in spite* of their Government officials. The Germans have held on as long as they have *because of* their Government. Now we have reached this stage whereat the best man wins, and the Frankish blood is telling. For, be it noted, the Franks were the only Teutonic tribe which ever conquered and ruled Western Europe, and our Norman, Norman-Irish, and Norman-Scottish aristocracy is descended from the Frankish rulers of France. Which is why we are winning.

However, that is merely by way of explanation. Let us to our allotments. First, by natural right, let us have the fighting men's point of view.

THE TEN LITTLE ALBATRI.

Ten little Albatri, patrolling on the Line;
Three "Camels" met them, and then there were nine.

Nine little Albatri thought they'd have a "hate";
One of them crossed the Lines, and then there were eight.

Eight little Albatri, flying close to Heaven,
Forgot about the "Dolphin" quite, and then there were seven.

Seven little Albatri, doing funny tricks;
One dived his wings off, and then there were six.

Six little Albatri, in a mighty dive;
One didn't see the ground, and then there were five.

Five little Albatri took on the Flying Corps;
It isn't very wonderful that soon there were but four.

Four little Albatri, out upon the spree;
One crashed landing, and then there were three.

Three little Albatri, feeling rather blue,
Attacked a British Fighter, and then there were two.

Two little Albatri, flying all alone;
The silly fools collided, and then there were none.

G. M. K. (R.A.F.)

Now, the "Ten Little Nigger-Boys" idea has been rather worked to death, it is true; but the verses quoted give one an idea of the "tails-up" spirit of the old R.F.C. It is particularly worth noting that they were composed by G. M. K. when on Offensive Patrol in France on June 23rd, 1918. That was before the Great Push began, and at a time when things were looking pretty blue on the map. So one sees how the "fine offensive spirit" of the R.F.C. survived into the R.A.F. in spite of all drawbacks.

Hereafter follow the thoughts of another breed of fighting man. The true poetic spirit shows, even though the workmanship may not satisfy the superior literary critic:—

A WAR FLIGHT.

Above, the radiant sun and the clear blue,
Below, like stately icebergs floating in the sky,
Great banks of snow-white cloud, some towered superbly high
With dazzling peaks and folds of purest hue,
Some gleamed in graceful billows, like an angry sea
Frozen into stillness. Joyfully along the free
And trackless air, seeking the sport of gods, he flew.

Swift, as a hawk swoops on a victim seen
Far down below, into the gleaming clouds he drove,
Now turning quickly hither, thither, whilst he strove
To leave a snowy tendril with the clean
Sweep of a tilted wing; now circling round a peak
Raised high above its peers, now plunging down a creek
Between two dazzling crags, and marvelled at the sheen.

Careless around a jutting bank he flies,
When suddenly he sees before him and below
A gaily painted Thing, and knows it for a foe.
Swift in pursuit he starts and deftly tries
To reach it unperceived. Unconscious of its fate,
The quarry gaily flies through scenes too bright for hate,
Nor recks of death's dark presence in the shining skies.

So through the brilliant clouds the chase goes on,
Now through a narrow gorge, white cliffs on either side
Towering in fairy beauty, and oft, as on they glide,
Their wing-tips cleave the yielding rock. On! On!

On through the fairy gorge to the clear sky they sail:
The hunter hovers, swoops, the tearing bullets wail;
Soon may a weeping mother mourn a gallant son.

C. E. Y. (R.A.F.)

The curious thing is that the fighting man who sees the beauty of his surroundings in the sky and hates the horrors of war is no less successful as a Hun-killer than is the swashbuckler who is all out to kill. The sharp contrast reminds one that the Troubadour or Minnesinger of five or six centuries ago was just as useful a killer as any brainless man-at-arms or roystering knight of his period. The poetic soul may dwell in a fighting man such as Cyrano de Bergerac as well as in a coward such as François Villon.

As a still further contrast consider the two following poems, which one believes even the most captious critic will agree contain the root of the matter of true poetry:—

ON THE DEATH OF A FRIEND.

He was our comrade, but no longer here
We listen to his voice, nor see his smile;
For he was taken from us, e'er the year
Had downed its first green robe, to rest awhile.

Oft we have seen him when the day was young,
Grand in his strength, and joyous in his youth,
Speeding his course to meet the rising sun,
In open-hearted, simple-minded truth.

For every face among a crowd of men
Is missed by someone when no longer there,
Who mourns its absence, sighing now and then,
And ofttimes silent, offering a prayer.

Like unto fruit upon a laden tree,
Plucked by a hand unseen yet ever there,
So we are chosen; some from Life set free,
The rest remain their brothers' work to share.

Even as flies upon a window pane,
Unknowingly awaiting sudden doom;
We live and die (and some say come again)
And others come and occupy our room.

Blind neither to his virtues nor his faults,
We miss his cheery smile and sunlit face;
Who marched his road with only needful halts,
And finished up the victor of his race.

M. F. T. (15.8.18).

Though the verses have nothing specifically to do with flying, they were written by an R.A.F. officer in memory of another, so they are entitled to their place in this collection. The next set of verses, by the same hand, is still far from perfect in technique, but the motive is original, and the idea is rather fine:—

A VETERAN SPEAKS.

. . . And then my friend was killed. I didn't care
After that morning if I lived or died
His fate I sought quite willingly to share.
And common sense and cautiousness defied.

So seeking death by every means I knew,
I only gained more victories in the air,
And altogether reckless soon I grew,
But still I did not care.

So I continued seeking death by day,
And dreaming death, and of my friend, by night,
Until "How brave he is," all men would say.
And yet death came not to me in the fight.

And then they pinned a medal on my breast,
And all men said again, "He is so brave,"
But 'twas not that, I only sought for rest,
The tranquil peace found only in the grave.

And then one night whilst flying o'er the place,
The self-same place my friend had met his death,
I heard his voice, and clearly saw his face.
Startled I was, and quickly drew my breath.

And, turning, saw him seated at my side.
He smiled as if in welcome, then he said:—
"Give me control, and I will be your guide."
So I changed seats with one I knew was dead.

And so I dropped my bombs with deadly aim,
The while my friend worked with his wonted skill;
And then I fought, intent to kill and maim,
Yet wished to die myself if they would kill.

Then, coming back, my friend began to speak:—
"Seek not your death," he pleaded with a sigh.
"I know you to be strong, but that is weak."
I said, "Now you are dead, I wish to die."

"That can be only foolish," he replied.
And once again he made the same request:—
"Seek not your death, even as I have died,
For 'hough Death brings release, Life is the best."

I turned and saw my friend no longer there;
So I descended, pondering what had passed.
And still I had no answer to my prayer
That I might also die and rest at last.

For that night's work (when I last saw my friend)
A deep red riband on my breast I wear.
"He is so brave, his courage knows no end,"
Men said. Yet, still, I did not care.

And after this I sought no longer death,
I went again no more into the air.
Where e'er I went I gasped and fought for breath,
My nerves were wrecked. But, still, I did not care.

The years have passed, and I am growing old,
And with my friends dull moments I beguile;
They speak of me and say:—"But you were bold."
I think "What fools these men all are." And then I smile.

M. F. T. (14.8.18).

Though the dates of the two poems indicate that one has set them in the wrong order, they seem to make a better sequence thus, as constituting cause and effect.

THE OBSERVERS.

Now we come to a different line of thought altogether. So far as the foregoing verses are concerned, one does not know whether they were written by pilots or by observers, but at any rate they were written by fighting men on the spot. But there is a distinct observers' outlook on life, which is of a more confirmed though resigned pessimism than that of anyone else. And small wonder.

When one considers that an observer, to be at all successful, must be essentially a man with brains, and when one considers that he and his brains and his concomitant imagination—which is a curse—have to trust themselves to any old kind of pilot who may be told off to take them aloft, one comprehends the growth of pessimism. And when, further, one knows that the most hare-brained and reckless fighting pilot scoops in medals and promotions galore for killing Huns, while the observer, whose job is not less dangerous and far more monotonous, gets hardly any recognition, and next to no promotion, one sees why pessimism becomes chronic.

From the very nature of his work one would expect the observer to make a better squadron-commander than would the mere fighting-pilot, and yet it is very difficult to find a squadron which is commanded by an observer. The observer's lot is improving, it is true, and no doubt he will come into his own in due course.

Meantime he has recently discovered a new and very legitimate grievance. Time was when the single-wing badge of an observer was only won after the wearer had proved his worth on active service. Of late, it seems, the single wing—itself the mark of an heroic soul, has been given to vast numbers of people who have never even been to see the war. They have passed through certain "courses" at home, and, having been good little schoolboys and having passed their exams. prettily, they have been allowed to wear the observer's wing, which has hitherto been the badge of courage and brains combined.

Note, therefore, the result on two of those who won their wing in the old way:—

THE OBSERVER'S LAMENT

In the dear old days of the R.F.C.,
When you flew a Quirk or a Rumpety,
With Infantry pay, seven-and-six a day,
You *earned* your wing as Observer.

You had a good time with the Squadron then,
And you do so now, but that was when
You had to "make good," and prove that you stood
The job with the Hun, as Observer.

Jolly proud you were of your single wing,
Which you loathed to change for the double thing.
An honour, you thought, which was right well bought,
Your badge as a fighting Observer.

It is now decreed by the Raf "Big Guns"
You can get your wing without fighting Huns.
For any emblem we don't now care a "dem,"
And we've buried the wing of Observer. A. A. B

[N.B.—A "Quirk" is a B.E.2c., and a "Rumpety" is a short-horn Maurice Farman.]

That is in the proper vein of resigned pessimism, but the next man is far more elaborately angry. He is evidently also one of the old P.B.I. who joined the R.F.C. in the good old days of the Corps. Hark to him :—

THE MEMORY OF AN "O."

We squatted in the shell holes, and we looked up to the sky,
And we thought the R.F.C. a splendid game.
We watched 'em dodging "Archie," and we watched 'em swooping by,
And we thought the R.F.C. the gate to fame.
We looked at our surroundings, a dead Hun outside the wire,
A pool of mud our home from day to day.
We sniffed the filthy gas-shell, we cursed the mud and wire,
And we thought the air a cleaner game to play.

So we put in applications, and we waited for our turn,
And were posted to a Squadron of B.E.'s,
Where we worked with the Artillery, and our job was to learn
All the things a Corps Observer does and sees;
We spotted for the Gunners, and we told them where they hit,
We looked for Huns and watched a target too,
We learned the look of Archie, which we didn't like a bit,
And Huns on Fokkers gave us work to do.

We gathered in the evening when the jobs of work were done,
And we didn't think the look of life too bad;
We played our game of rounders, there was always heaps of fun,
Though the peasants in the farmhouse thought us mad.

We looked forward to the day when we earned our single wing.
Then we got it, and we felt we'd done our show,
And foregathered in the mess for a drop of—anything,
To celebrate the wearing of an "O."

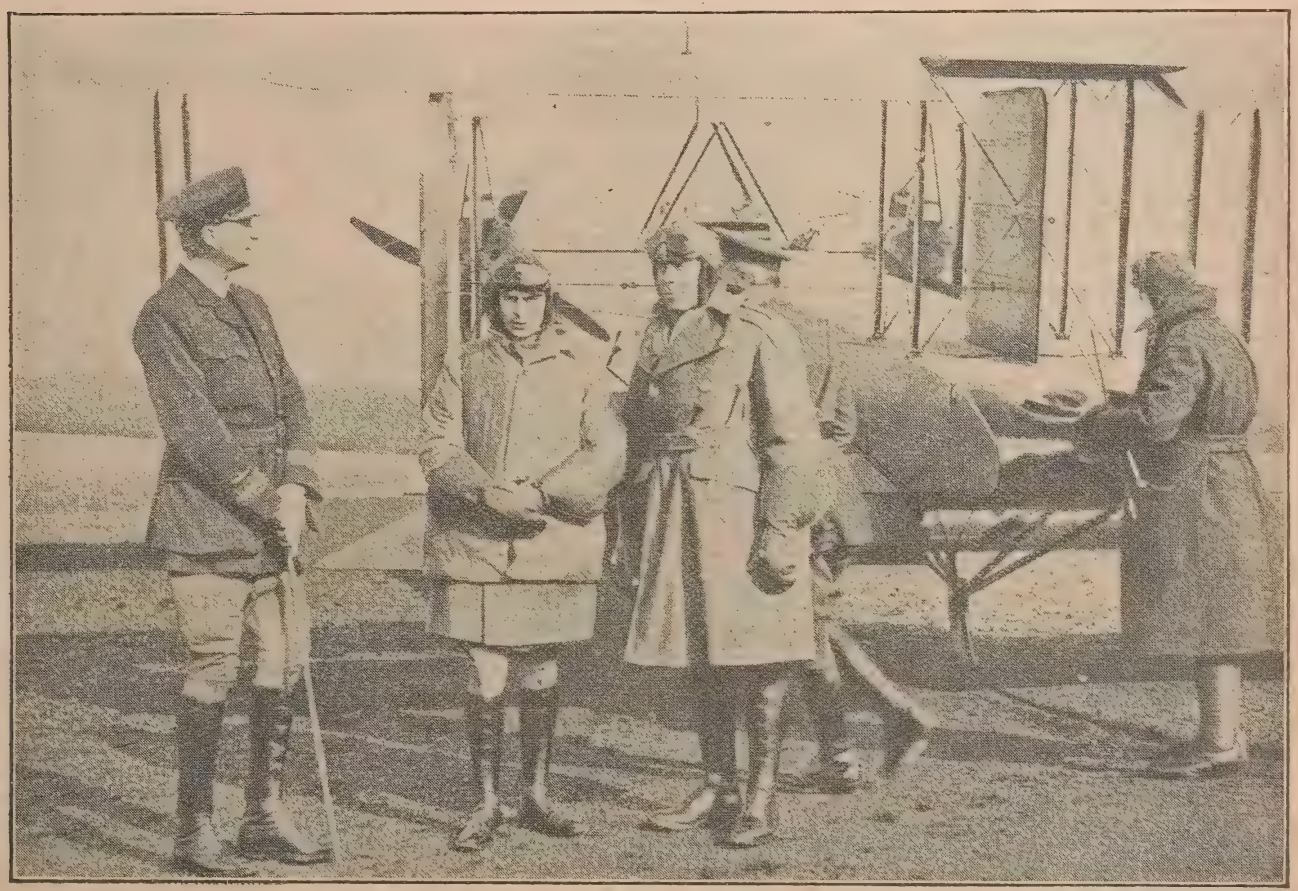
Then we drifted back to England, when our time in France was done;
We were proud to show the other men that "O,"
For it meant that we had earned it—nor easily 'twas won.
We were staggered by a very bitter blow,
For they've sold it very cheaply, betrayed its very name,
For any sort of flight they let it go.
All those jobs we did to get it, we have done them all in vain.
And now it's just the memory of an "O."

THE BOMBERS.

Hitherto the bombers, both night or day operators, have been singularly silent. Whether it is that they sleep all day and work all night, and so have no time in which to cultivate the Arts, or whether it is that they are all of the "strong silent man" type, who is traditionally un-vocal, is not clear. At any rate, it cannot be that the bomber's work is less inspiring than that of the pilot or observer in other jobs in the Flying Services. However, here is the first bomber's poem, and one submits to the literary critic that it is good stuff : –

DAWN.

"Machines will start at dawn." They say
It's always dawn, or just before;
Why choose this rotten time of day
For making war?
From all the hours of light there are
Why do they always choose the first?
Is it because they know it's far
And far the worst?
Is it a morbid sense of fun
That makes them send us day by day,
A target for the sportive Hun
Who knows our way,
And waits for us at dawn's first peep,
Knowing full well we shall be there,
And when that's done, may go to sleep
Without a care?
And don't they know Napoleon
Once said (in French) these words: "Lor' lumme,
No man can fight at all upon
An empty tummy"?



R.A.F. Official Photograph.

Capt. H.R.H. Prince Albert, R.A.F. (in centre), and Maj. Greig about to fly to France.

Yet every morn, we "Bold Bird Boys"
Clamber into our "little Busses"
And go and make a futile noise
With bombs and cusses.
And every night the orders tell
The same monotonous old story;
"Machines will raid at dawn." To hell
With death and glory.
Why can't they let us lie in bed,
And after breakfast and a wash,
Dispatch us clean and fully fed
To kill the Boche?
I hate the dawn as dogs hate soap,
And on my heart when I am gone,
You'll find these words engraved, "Dawn, hopeless, streak of, one."

That is quite in the right spirit. A real good grouse at the job he has to do, and yet one may gamble on his doing the job thoroughly. One hopes that this one bomber's poetic effort will encourage others in the bombing squadrons to go and do likewise.

THE N.C.O. PILOT.

So far the N.C.O. pilot has had no more show than the bomber, so here is an effort on his behalf. One hopes that some of the very superior young gentlemen who—out of sheer spite on the part of their C.Os., of course—have been made N.C.O. pilots on passing out of Cadet Battalions, instead of being made Flight-Commanders on the spot, will not resent the poet's attempt to depict the outlook of the Old Army N.C.O. who became a pilot before their day:—

"GRUMBLER," OR THE N.C.O. PILOT—HIS SONG.

You sink in the seat of your 'bus,
A mechanic, he swings up your prop;
Then comes: "Suck-in" an' "Contact" and fuss,
And then you start off with a hop.

It's dawn and the sky's turnin' yellow,
You pull back your joy-stick, and lo!
You must be a bloomin' fine fellow,
For straight up to Heaving you go!

Now you're over the Lines, and it's lighter,
And Archie's beginnin' to show—
But, then, you're a dam' lucky blighter
To go over it—'stead of below

Thank God, mate, you ain't in the trenches,
Surrounded by bleedin' and dead,
With the groans and the moans and the stenches—
Thank God, mate, you're up overhead.

Your enging is roarin' to cheer you;
Come, buck up, old son, and look spry.
You say that's an Archie burst near you,
Well, pull back your joy-stick—strike high.

What's that, chum? You says you feel lonely?
And your enging has splashed you with oil?
Well, grin—and remember it's only
A part of your everyday toil.

Ha! there's a Fokker below you;
You dive for to find out who's who,
But the Bosche he don't wait for to show you—
He's got somethin' better to do!

So you follow and gain on him slowly
(For Archie not carin' a rap);
Now you've caught him, and by all that's holy,
You're havin' a Hell of a scrap!

You're side-slippin', loopin', and divin'
(You're leadin' old Fritz such a dance!),
An' you're always persistently strivin'
To give your old Vickers a chance.

Now you're spinnin', now bankin', now stallin',
But you haven't got Boche knackered yet;
Now you're zoomin', now pouncin', now fallin'—
Now's your chance, mate; you have got him set!

You give him one burst—then a second,
And he gives you round after round.
Look, matey! that's what you reckoned—
He's spinnin' in flames to the ground!

But by now there is quite a collection
Of Rumplers (some Halberstadts too),
So quietly make your selection—
(The Boche-boy that's nearest to you).

An' you open your throttle and charges,
Then you pancake, an', quite unawares,
Fritz finds that 'is cockpit enlarges—
For he's joined Brother Fokker downstairs!

Then the rest of their squadron flies homeward,
While Archies around let you know,
As you proceed back—Aerodromeward,
That Fritz-boy don't like you—oh, no!

(To be continued.)

R.A.F. FASHIONS AGAIN.

This matter of the R.A.F. uniform is really getting past the jesting stage. The latest order one hears is that everybody is to wear Bolo blue except on their own aerodromes after Nov. 1st. The Order is obviously absurd, because it is palpably impossible for everybody to buy Bolo blue in the time specified, even if everybody could afford to do so—a proposition which is equally obviously absurd. It is possible, however, that the new order really means that everyone must wear R.A.F. uniform—*id est* R.A.F. khaki, when away from the aerodrome.

As already stated in this paper, it is understood by the various tailor people that each batch of cloth supplied by the manufacturers of the R.A.F. uniform is to be a shade darker than the previous batch, which will, of course, lead to horrible complications. If the various old uniforms are still to be worn on the aerodromes, squadron commanders will be reduced to grading their officers on parade in order of colour, starting with the old Navy blue at the top as the senior Service, and then grading down through the various shades of Bolo blue to the oldest and lightest and most faded colour, after which the tropical khaki will start, and so on through the various shades and fadedness of khaki up to the old R.F.C. uniforms. The effect will, doubtless, be, as has been suggested in another paper, something like "The Man in the Moon" scene in the Hippodrome revue.

It is said that the ultimate shade of Bolo blue is to be that which in paint-boxes is labelled "Prussian blue." That, at any rate, is a good omen, because it may be an augury of efficiency.

It is also said that the crown-and-bird badges which disappeared from the sleeve of the R.A.F. khaki are to appear again on the lapels of the new blue uniforms. The effect will, doubtless, be highly decorative, but it appears somewhat unnecessary, and if pure decorativeness is the desideratum, why not have crowns and birds alternating all the way round the belt, and then there would be no mistaking to which Service a man belonged, no matter from what angle one approach him.

It is also said that four more leaves are to be added to the "bananas" in the cap badge. This, of course, will be a further expense for R.A.F. officers, and one is not surprised at the query which one often hears as to who is interested in a tailors' combine to get rich quick out of the R.A.F. officer.

Purely as a matter of historical interest, it seems worth while to note the number of uniforms which at the moment are all correct regulation wear in an R.A.F. mess. To begin with, there is the old pukka R.N. uniform, with the crown-and-bird badge on the sleeve; then there is the regular R.N.A.S. uniform, with the crown-and-bird badge and buttons and ribbons; and then there is the regular R.N.V.R. uniform of officers attached R.N.A.S.; then there are the same three uniforms in khaki for over-seas wear, and there are the same three in tropical khaki, which makes nine on the R.N.A.S. side alone.

Then there are the R.F.C. double-breasted jacket, the regulation field service jacket, with R.F.C. badges, and the same in tropical khaki; and there is the regulation R.F.C. mess kit in blue serge, with the broad red stripes of a Royal regiment down the legs of the overalls, which makes fourteen types of uniform.

Then there are the regulation khaki of the regimental officer attached R.F.C., and the same in tropical khaki, and the regulation mess kit of the various regiments. One may class these as only three types of uniforms, though as a matter of fact they range all the way from a Highlander's kilts to the bit-burnishers of the Indian cavalry. These bring the total up to seventeen.

Then there are the double-breasted jacket of the Australian Flying Corps, the field service jacket of the A.F.C., and the same in tropical khaki, which brings the styles up to twenty.

Then there is the original R.A.F. khaki uniform, with the blue rank stripes and minus a Sam Browne, and there is the same in tropical khaki.

Finally, there is the Bolo blue, which, in spite of its numerous shades, may be classed as one type of uniform, so that altogether there are twenty-three types, all of which may be worn without falling foul of the Provost Marshal.

Possibly, there are a few other types which one has forgotten. If so, it would be interesting to hear about them. Meantime, the oft-quoted phrase, "a motley gathering," seems to apply.—C. G. G.

. The .

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LORD WEIR AND VICTORY.

At Glasgow on Oct. 26th the Imperial Air Fleet aeroplane City of Glasgow, the funds for which were raised by the citizens, was publicly presented to Canada and handed over to the Royal Air Force for service at the front. This completes the three I.A.F. units presented to Canada by efforts organised by the I.A.F. Committee.

Lord Weir, Air Minister, writing to Glasgow in acknowledgment of the gift, said the Allies' victories had created a situation wherein the air operations were rendered even more valuable than before. The Air Force had so developed as to be able to exercise a vital influence in determining the length of the war. In Palestine the air squadrons were the main instruments in converting a military defeat into complete destruction of the enemy forces. The Air Force believed they could best assist towards peace by continuing to hit the enemy as hard as possible.

THE LATE ROLAND GARROS.

It seems now only too true that Roland Garros is dead, and that France has to mourn one of the most gallant of her many gallant sons. Amid the millions of tragedies of the war his death stands out as one of the most tragic and most heroic. He was one of the earliest and best of French aviators, and to the end his skill and nerve never left him. He remains in the memory of those who knew him as typical of all that is best in the great French nation which has done so nobly in this and so many other wars.

Roland Garros first became known to fame as a Blériot pilot, when he flew in the great Paris-Madrid race in 1911. Though he did well in this and other long-distance races he never won any of them, and his reputation was made rather as a breaker of altitude records, and as a pilot of extraordinary skill, than as a cross-country flier. It was after he took to flying a Morane monoplane that his skill developed to its highest point, and in the competition between him and the late Gustav Hamel at Juvisy in 1914 he reached the highest level of *adresse* at that period.

Early in the war he made a name for himself as a hunter of German aircraft, and he was the first pilot to use habitually a machine-gun firing through his airscrew, which he fitted with deflectors to prevent its destruction by his own bullets. Unhappily he was captured by the enemy, but after a long period as a prisoner he made a very gallant escape in company with another famous aviator, Marchal.

After a period at home, during which he learned all the knowledge about flying which had been acquired during his imprisonment, and showed that he had lost none of his old skill as a pilot, he returned to active service. He was under no obligation to do so, for it is generally accepted that when a prisoner has escaped he should not be obliged to fly against the enemy by whom he has previously been captured, lest he should be captured again and made to suffer for escaping. Nevertheless, like the gallant soldier he was, Roland Garros elected to go and "get his own back" from the Germans for his period of imprisonment.

His death in action was doubtless such as so brave a man would have desired, but one laments that his second period of flying on the front was so short as to give him little opportunity to do the work which he so much desired. One offers to French Aviation the respectful sympathy of all British aviators in the loss which it has suffered by the death of Roland Garros, who died as he lived, worthy of bearing the name of one of the chiefest of the Paladins of France, and, like the Chevalier Bayard, *sans peur et sans reproche*.—C. G. G.

THE LATE LEON MORANE.

It is with deep regret that one records the death of M. Léon Morane, one of the pioneers of French aviation, who died recently in Paris of pneumonia following influenza. Léon Morane was a young man of considerable means when flying began, and purchased two of the first Blériots. He became well known in England through his flying at the Bournmouth Meeting in July, 1910, after which Meeting he sold his two machines—a side-by-side two-seater and a single-seater—to Mr. Armstrong Drexel, who founded the Beaulieu School with them.

Later in the year, when making a start for the Michelin Cup Competition, which involved landing on the top of a mountain near Clermont Ferrand, something went wrong with the control of his Blériot, and M. Morane and his younger brother had a fall of some 50 ft. Both were seriously injured, and for some time Léon was in grave danger. However, he recovered, and afterwards started in business with M. Borel, making the Morane-Borel monoplanes, which did so well in the classic races of 1911.

Parting from M. Borel in 1912, M. Morane joined forces with M. Saulnier, who was responsible for much that was good in the early Blériot machines, and the partnership has endured ever since. M. Saulnier was essentially the technical man, and M. Morane the practical business head. The combination worked excellently.

In 1913 and 1914 the Morane aeroplanes carried all before them in speed and cross-country competitions, including the wonderful flights of Roland Garros, Brindejonc des Moulinais, Gilbert, Hamel, Noel, Brock, and other famous pilots. Soon after the outbreak of war, the Moranes, piloted by Garros, Vedrines, and others, proved themselves to be excellent fighting machines, and on them were fitted the first guns firing through the airscrew. The "parasol" type Morane in its turn became a very popular reconnaissance machine.

The Morane-Saulnier output increased enormously, and the firm supplied not only the French Service but the R.N.A.S., the R.F.C., and the Russian Army with hundreds, if not thousands, of machines. Until the advent of the small biplane fighters, such as the Sopwiths and Nieuports, the Moranes were probably the best single-seaters in the war, and the way in which the Fokker was copied from them shows the estimation in which they were held by the enemy.

The firm has at times made biplanes of various types, big and little, including some very successful twin-engined machines. It has also made several hydro-monoplanes which flew well, but it is from the characteristic monoplane that the name of Morane is best known. One assumes that the financial people involved will keep the firm going, under the skilful control of Dr. Saulnier, but the founder of the firm will be sadly missed.

Personally, Léon Morane was a splendid example of the intellectual young Frenchman. Though physically far from robust, he was by inclination a sportsman, and he spent his wealth lavishly on flying even after he took to building aeroplanes as a business. It is improbable that in pre-war days the profits on his machines paid for the vast expense of the big journeys made by the Morane pilots, and the assumption is that the cost was defrayed by Léon Morane. He himself was of singularly charming manner and of amiable disposition, so that many have lost a dear friend at the moment when France has lost one of her great pioneers of aviation.—C. G. G.

A ROYAL VISIT BY AIR.

Reuter's correspondent at Dunkirk writes on Oct. 23rd:—

The King and Queen of the Belgians flew to Bruges this morning in two aeroplanes. They left at 8.45 a.m. and arrived half an hour later.

The enthusiasm of the inhabitants was beyond description. Their Majesties passed through the principal streets, and left again by aeroplane, completing the return journey by 11 a.m.

R.A.F. ATHLETICS.

The North-Eastern Area Athletic Association, which has been formed for the purpose of the encouragement of sport of all kinds throughout the Royal Air Force in the North of England, has instituted a series of fortnightly meetings at various big centres.

Some capital boxing was provided by the contestants at the meeting held at the Drill Hall, Leeds, on Saturday, Oct. 19th, last, at which there was a good entry of novices.

The special six-round contests proved interesting events, particularly the sparkling bouts between Serjt.-Maj. Kirk (R.A.F., Sheffield) and Cpl. Laing (R.A.F., Leeds), in which Cpl. Laing was the winner of a contest in which neither man spared himself.

Bombdr. Nat Simmons (R.F.A., Ripon) won easily from Pte. Barney Shepherd.

Other results were:—

Final, Light-weights.—1st Air Mech. Bell (Sheffield) beat Boy Aberdeen (Sheffield).

Final, Welter-weight.—3rd Air Mech. Jackson (Leeds) beat Serjt. Powell (Leeds).

Final, Middle-weight.—Pte. Salter (Redcar) beat 3rd Air Mech. Burt (Sheffield).

Final, Feather-weight.—Pte. Harris (Leeds) beat Boy Towers (Sheffield).

Final, Bantam-weight.—2nd Air Mech. Spiller (Leeds) beat 1st Air Mech. Barritt (Leeds).

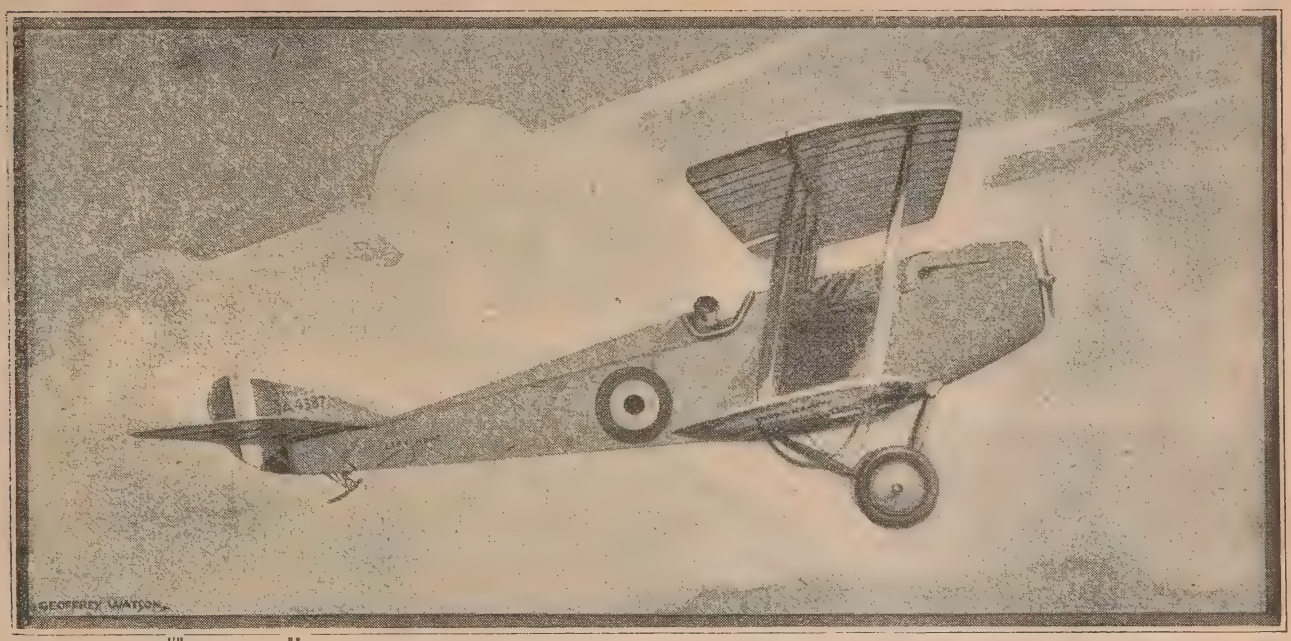
Referee: Capt. Metcalfe, Superintendent of Gymnasia, N.E. Area, R.A.F.

Lt.-Col. Clarke, M.C., Chief Inspector of Gymnasia, R.A.F., attended the meeting and distributed the prizes, and in his preliminary speech pointed out the value of such organisations as the N.E.A.A.A. in promoting and fostering the true spirit of sport. He laid stress on the fact that it was that sporting spirit so deeply engrained in the Englishman, and represented at its best by the art of boxing, that had given our Air Force its pre-eminent place in this world's war.

THE AUSTRALIAN FLYING CORPS IN PALESTINE.

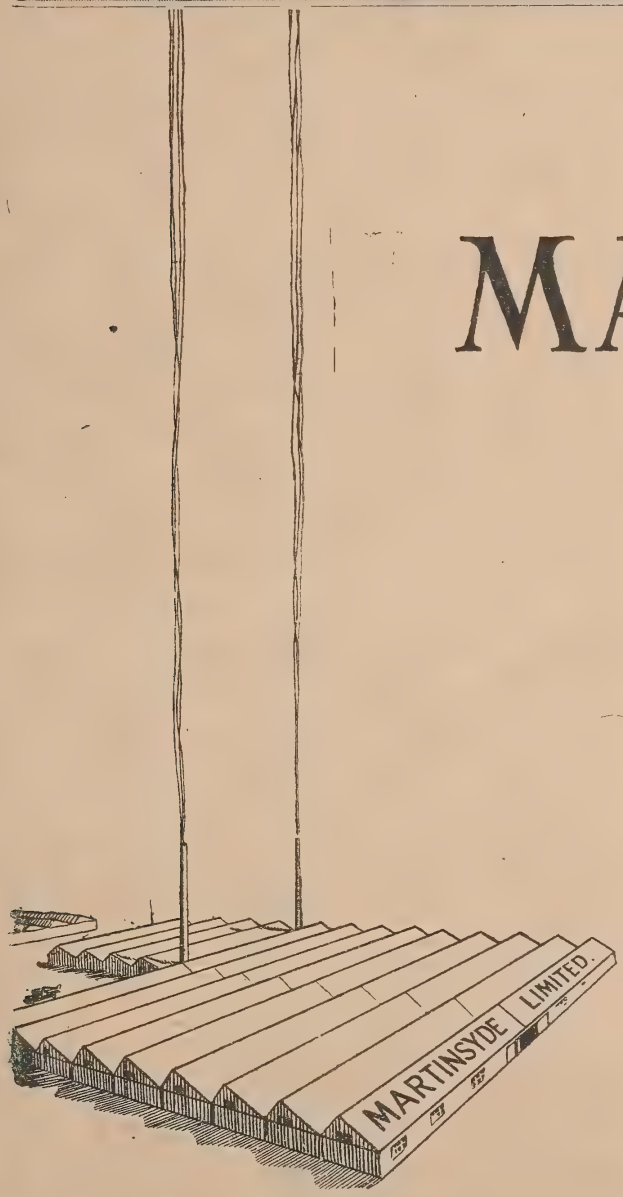
Mr. W. T. Massey writes on Oct. 27th, from Palestine, as follows:—

A few enemy aeroplanes have been seen recently. A week ago one which ventured south of Aleppo was attacked by the Australian Flying Corps and forced down. Our pilot landed beside it, and while the observer machine-gunned the occupants, who were running away, the pilot fired three lights into the enemy plane, burning it. Owing to the soft ground, he could not take the aviators prisoners, for his machine would not rise with the weight. One machine bombed the enemy aerodrome at Muslimie Junction, 12 miles north of Aleppo. Three German aeroplanes rose to attack, but were driven down, and all three machines were burnt. The enemy immediately afterwards evacuated the aerodrome.





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THE "LEINSTER" TRAGEDY.

In the House of Lords.

On Oct. 22nd **Lord Oranmore and Browne** called attention to the loss of the "Leinster," and asked whether any, and, if so, what, precautions were taken to protect the Royal Mail steamers plying between Holyhead and Kingstown; and whether it was proposed to make any provision for the widows and orphans of the officers and members of the crew of the "Leinster"; and also moved for papers. After describing the circumstances attending the torpedoing of the "Leinster," and characterising as unsatisfactory the explanations given by the Admiralty, the noble lord said that while it was true that the Irish mail boats had been running for four years without disaster, this was not the first time by many that attempts had been made to sink them. He had himself crossed on the "Leinster" two days before the fatal Oct. 10th, and on that occasion he was told by one of the officials that an attempt had been made on her by a submarine on the previous day. There was no doubt the directors of the company held pronounced views on the matter, and within the last 24 hours the Admiralty had received a very strong communication from them urging the necessity of protecting these boats. He suggested that a small committee, composed of Lord Loreburn, Lord Atkinson, and Lord Beresford, should go into the question and recommend to the Admiralty what steps should be taken. He did not assert that the Admiralty would be able to carry out the recommendations, but useful points might be raised that would be worthy of consideration. He was informed that 5,000 people travelled daily between Kingstown and Holyhead, and under the present circumstances women and children ought not to be allowed to travel by that route. The Larne and Stranraer route was the shorter one of the two, and if the Kingstown and Holyhead route could not be properly protected, then women and children should not be permitted by the route. He wished to ask the Government if it were prepared to make provision for the widows and orphans of the officers and members of the crew of the "Leinster" who perished. It was the duty of the country to see that the dependents of the officers and crew did not suffer want. He moved that the correspondence that had passed between the various departments of State and the Dublin Steam Packet Company should be laid upon the table of the House.

Lord Somerleyton, replying on behalf of the Admiralty, expressed the deep sympathy of the Government and the Admiralty with the sufferers by the "Leinster" disaster and their relatives. After stating some of the points in the reply made by Dr. Macnamara in the House of Commons on Tuesday last, he said that a large number of experienced naval officers were working at that time for the prevention of these disasters, and that all possible precautions were taken and were being taken to protect these boats against submarine attack. All the points raised would receive the fullest consideration. He thought it undesirable in the public interest to have an inquiry such as has been suggested. The dependents of the officers and men of the "Leinster" would, as a matter of course, be granted pensions and allowances in accordance with the War Risks Compensation Scheme of the Mercantile Marine.

The **Earl of Mayo** said that he had crossed fairly frequently, and on only two occasions had there been an escort. The complaint in Ireland was that there had never been a sufficient escort, rough weather or fine.

Viscount Midleton said that of the very numerous occasions on which he had crossed on only two was there an escort, and one of these occasions was the only time the ship he was travelling by was fired at and missed by a few yards. He was sure that the House would not desire, in view of the enormous demands made on the Admiralty for the protection of incoming American troops, that an undue number of destroyers should be detached for the protection of a mail service which had had extraordinary immunity from attack.

The **Earl of Donoughmore** said they realised the enormous task of the Navy, but, at the same time, there was an impression over this business that someone had blundered. What was wanted was a very strong assurance that that blunder would not be repeated. Undoubtedly, the responsibility rested upon the Admiralty. It was well known that the escort system was in existence elsewhere. If it were correct elsewhere, why was it not correct in the Irish Channel? If these boats were too fast for an escort in rough weather, surely they ought not to be allowed to sail in rough weather.

Lord Sydenham asked whether these mail boats were being escorted by aircraft, and whether they kept the same course. He hoped that if the commander of the submarine responsible for this outrage came into our hands he would be tried for murder.

Lord Somerleyton said he would bring all the questions which had been raised to the attention of the Admiralty.

The motion was, by leave, withdrawn.

In the House of Commons.

On Oct. 23rd **Mr. Houston** asked the Secretary to the Admiralty whether, at the time that the mail steamer "Leinster" was sunk by enemy submarine, the wireless installation at Kingstown was out of order and did not immediately receive the S.O.S. calls; and whether, although many Government craft, including destroyers, were in Kingstown Harbour at the time the "Leinster" was sunk about 12 miles only from the harbour, a considerable time elapsed before any Government vessel reached the scene of the disaster.

Dr. Macnamara said: The Admiralty is not aware that the wireless installation at Kingstown was out of order, and, as I stated in my reply to my hon. Friend the member for East Mayo, all available vessels were clear of the harbour within 10 minutes after the senior naval officers at Kingstown received the message. My hon. Friend will realise that a certain proportion of the vessels in harbour are undergoing boiler cleaning and so on, and cannot be kept permanently at sea.

Replying to further questions, **Dr. Macnamara** said, as to how it was that 25 minutes passed between the dispatch of the message and its receipt, he could not say whether it was due to the reduction of the range of the wireless on the "Leinster" through injury or whether the message got to Kingstown by another vessel; but he would make inquiries. The vessels put out from the harbour within 10 minutes of the receipt of the message. Before their arrival there were two destroyers present.

Mr. Dillon asked whether it was possible that the senior naval officer at Kingstown in his report did not give full details as to whether the wireless message was received direct from the "Leinster" or from another vessel.

Dr. Macnamara replied that he would inquire.

THE WORK OF THE I.F., R.A.F.

A Karlsruhe telegram in the "Frankfurter Zeitung" of Oct. 26th says:—"Enemy aviators, who on Monday evening (Oct. 21st) attacked Mannheim and Ludwigshafen, did not succeed in penetrating into the interior of the town. Small material damage was done. Kaiserslautern was attacked on Tuesday night, and material damage was done. Some bombs were also dropped outside Hettenleidelheim."

The "Frankfurter Zeitung" says that two air attacks were made on Wiesbaden on the night of Oct. 24th. Seven bombs were dropped, causing not inconsiderable damage to private houses. Five persons are missing and eight were wounded.

MISS DOUGLAS-PENNANT AND THE W.R.A.FS.

The "Daily Express" published the following paragraph from their Parliamentary correspondent on Oct. 26th:—

There is to be full and immediate inquiry into the reasons for the summary dismissal by the Air Council of Miss Violet Douglas-Pennant from her position as Commandant of the Women's Royal Air Force. Mr. Lloyd George has asked Mr. Cecil Harmsworth to conduct the inquiry, and he has consented to do so.

It was in August that Miss Pennant was superseded without notice and apparently without explanation, although only a few days previously a warm tribute was paid to her in the House of Commons.

She at once intimated that she would not resume her duties as a Health Insurance Commissioner until there had been a full judicial investigation. She appealed to the Prime Minister, with the result I am now able to announce.

The inquiry will be private, but the result will be made known.

A DESERVED HONOUR.

It is recorded in the "London Gazette" of October 29th, among the "Honours for Services in Submarines," that the King has been graciously pleased to approve of the award of the following honour to the under-mentioned officer:—

To be Companion of the Distinguished Service Order.

Lt.-Comdr. John Graham Bower, R.N.

Comdr. Bower was one of the first of the Naval officers to fly, having taken his certificate No. 163, dated Nov. 28th, 1911, at the Bristol School at Lark Hill. He made a gallant attempt on the Michelin Competition of that year, but was stopped by an accident. Later on he gave up flying, and never joined the R.N.A.S., and thus the Flying Services were deprived of a very valuable officer. He has won distinction in other fields besides submarining and flying, but that is another story.

A ONE-MAN SHOW.

On October 28th there was opened at the Brook Street Art Gallery, 14, Brook Street, New Bond Street, W.1, an exhibition of drawings and paintings by Mr. Geoffrey Watson, which has been organised under the patronage of the Countess of Drogheda, who performed the opening ceremony. Among other distinguished visitors present were Lady Ethel Baird and Brigadier-General E. M. Maitland, D.S.O., R.A.F.

Mr. Watson's work is well known to the readers of The Aeroplane for its technical accuracy and realism, and the exhibition affords one an excellent opportunity for inspecting some of his original work, which is naturally even better than the process reproductions.

Any readers of The Aeroplane are cordially invited to visit the exhibition, admission being free, and Mr. Watson will be pleased at all times to meet inquirers by appointment with a view to executing commissions.

The exhibition will probably be open till November 9th.

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FROM THE "LONDON GAZETTE."

Air Ministry, Oct. 22nd.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Staff Officer, 2nd Cl.—Lt. (temp. Capt.) H. Atkins, and to be temp. Maj. while so empld., Oct. 8th.

Staff Officer, 3rd Cl.—Lt. (temp. Capt.) F. M. Iredale, and to retain his temp. rank while so empld., Oct. 14th.

The following temp. appts. are made:—Staff Officers, 1st Cl.—Maj. (temp. Lt.-Col.) C. E. Maude, and to retain his temp. rank while so empld; Capt. (temp. Lt.-Col.) O. A. Butcher, D.S.C., and to retain his temp rank while so empld., June 10th; Lt.-Col. T. W. C. Carthew, D.S.O., Sept. 24th.

Staff Officers, 2nd Cl.—And to be temp. Majs. while so employed:—Capt. C. B. Krabbé, June 29th (substituted for notification in "Gazette," Sept. 10th); Capt. K. T. Dowding, Aug. 26th; Capt. A. McR. Moffatt, vice Capt. (temp. Maj.) Rt. Hon. Sir J. A. Simon, K.C.V.O., Oct. 5th.

Staff Officers, 3rd Cl.—And to be temp. Capts. while so empld., if not already holding that rank:—Capt. G. Aste, Sec. Lt. A. E. Cripps, Lt. (Hon. Capt.) L. Pell-Ilderton, Sept. 9th; Lt. A. Cunningham-Reid, vice Capt. (Hon. Maj.) H. R. P. Reynolds, Oct. 2nd; Capt. E. N. E. Waldron, Oct. 11th.

Staff Officers, 4th Cl. (2nd Cd.).—And to be temp. Lts. while so empld.:—Sec. Lt. S. J. Dodson, Sept. 20th; Sec. Lt. A. Gauld, Oct. 7th.

Flying Branch.—Maj. H. Wyllie to be temp. Lt.-Col. while empld. as Lt.-Col. (A.), Oct. 3rd.

Capts. to be temp. Majs. while empld. as Majs. (A.):—C. W. Hyde, Sept. 1st; D. F. Stevenson, D.S.O., M.C., Sept. 10th; H. Colmore, Oct. 2nd; J. F. Gordon, D.F.C., Oct. 4th; C. O. Fairbairn, C. B. Dalison, Oct. 12th.

Capts. to be temp. Majs. while empld. as Majs. (K.B.):—Hon. Maj. J. H. Davis, July 12th; M. H. Spencer, Sept. 13th; O. M. Ayrton, Sept. 18th.

Lts. to be temp. Capts. while empld. as Capts. (A.):—(Hon. Capt.) G. E. Wildman-Lushington, Aug. 8th; S. G. Wingfield, H. W. Elliott, S. A. H. Bowyer, R. W. Anderson, G. P. Alexander, D. Sutherland, C. D. Skinner, E. A. Mearns, (Hon. Capt.) A. F. Hordern, J. W. L. Birkbeck, H. Sutherland, W. A. G. Young, J. B. Henry, W. F. Hellyer, I. Gregory, H. A. F. Goodison, G. E. Brooks, N. C. Buckton, Oct. 1st; F. W. Gillett, Oct. 14th; F. C. Crummey, Oct. 15th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—H. P. Dalwood, June 30th; J. P. Grieve, A. A. Eales, Aug. 3rd; R. J. Palmer, C. F. Sutton, A. B. Broom, Aug. 31st; T. W. N. Hitge, Sept. 15th; W. Pollock, L. M. Robinson, J. G. Rodwell, L. S. Stuart, R. C. Tidbury, L. F. Toucher, E. R. Yelland, A. H. R. Younglesson, F. V. Raleigh, Oct. 12th.

The following Sec. Lts. are ante-dated in their appts. as Sec. Lts. (A. and S.), with effect from the dates stated:—R. F. Ralph, May 5th; E. G. Corey, July 7th; J. Thibaudeau, Aug. 10th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—G. S. Smith, July 19th; G. E. Dowler, Aug. 11th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—G. D. Gosnell, Sept. 27th; W. T. Wrathall, A. M. McKay, G. G. Duddell, A. Betterley, J. G. Pearson, E. J. Atherton, J. E. Fox, Sept. 28th; E. G. Carter, Oct. 4th; J. W. Brown, Oct. 5th; R. A. B. Warrilow, J. Briscoe, P. A. Miller, T. P. Forrester, Oct. 8th; W. A. Robertson, G. H. Steels, Oct. 9th.

The following are granted temp. commns. as Sec. Lts. (A.):—W. S. McLean (Lt., R.F.A., Spec. Res., and to be Hon. Lt.); H. J. Armitage (temp. Sec. Lt., D. of Corn. L.I.), Sept. 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers):—H. D. H. Williams, June 21st; F. Brown, Sept. 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—W. Tunstall, June 1st; W. Kennedy, R. Latham, S. Richards, T. James, S. R. Darke, L. R. Shaw, D. Smith, E. T. Jones, E. A. Mann, J. B. Weir, S. Wells, Oct. 14th; W. T. Annan, F. J. Bell, C. E. Fry, H. H. Hand, S. J. Wines, H. E. Sheffield, S. A. Church, A. J. Stewart, J. S. Winks, H. Cavill, F. C. Mildenhall, W. D. Wicks, Oct. 15th; G. H. Tyler, Oct. 16th; A. E. Huffer, R. G. T. Giddens, J. S. D. Taylor, T. J. W. McFadden, S. M. Anderson, H. C. R. Holden, G. F. Gander, Oct. 17th; B. E. Woolstencroft, A. F. Quittenden, D. M. Brown, H. C. Tombs, J. A. G. Williams, T. P. Knott, A. G. Holder, R. Rigby, D. B. Derbyshire, A. Westall, J. Tibbatts, A. R. Culley, C. W. Gill, G. W. Wood, W. H. Gardner, Oct. 19th; W. Norris, F. H. White, Oct. 20th; R. A. P. Hales, S. J. Bassett, W. Richards, Oct. 21st.

The following are granted temp. commns. at Sec. Lts (Obsr. Officers).—R. O. Clark (temp. Sec. Lt., attd. R. Suss. R.), Sept. 26th; G. Caiger-Watson, M.C. (Lt. R. Ir. Fus.), and to be Hon. Lt., Sept. 28th; I. K. Gillespie (Sec. Lt., Army Cyclist Corps, T.F.), Oct. 17th; E. G. Kelly (temp. Sec. Lt., R. Dub. Fus.), C. A. Overbury (Sec. Lt., Lond. R., T.F.), Oct. 21st; T. M. Cornish (Sec. Lt., Oxf and Bucks L.I., Spec. Res.), D. M. Thomas (temp. Sec. Lt., A.S.C.), C. McWilliams (Sec. Lt., Gordon Highrs., T.F.).

Sec. Lt. (Hon. Capt.) Hon. R. W. Morgan-Grenville (Capt., Rif. Brig.) relinquishes his commn. on ceasing to be empld., Sept. 28th.

Lt. W. R. F. Gillham (Lt., R.A.) relinquishes his commn. on account of ill-health contracted on active service, Oct. 9th. (Substituted for notification in "Gazette," Oct. 8th.

Lt. W. B. Swart relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 23rd.

Lt. E. R. Varley, M.C., relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Oct. 23rd.

Lt. F. L. Craig-Kelly (Lt., R.W. Kent R., Spec. Res.) relinquishes his commn. on account of ill-health caused by wounds, Oct. 23rd.

The following Lts. resign their commns. to resume medical studies, and are granted the hon. rank of Lt.:—N. C. Simpson, J. H. Johnson, Oct. 23rd.

Lt. E. Collis relinquishes his commn., being physically unsuited for the duties of Pilot or Obsr., Oct. 23rd.

Lt. E. W. Turner resigns his commn. being physically unsuited for the duties of Pilot of Obsr., Oct. 23rd.

Lt. E. K. Green resigns his commn., and is granted the hon. rank of Lt., Oct. 23rd.

Lt. H. A. McEwan resigns his commn., Oct. 23rd.

Sec. Lt. V. S. Grigg resigns his commn. to resume medical studies, and is granted the hon. rank of Sec. Lt., Oct. 23rd.

The following Sec. Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs.:—S. G. Groom, F. W. B. Bradshaw, A. McCallum, P. E. Beadle, L. C. Page, E. C. Brant, R. S. Percival, W. G. MacCormack, H. J. Sinclair, Oct. 23rd.

Administrative Branch.—Capt. (temp. Maj.) H. R. Bentley to be temp. Lt.-Col. whilst empld. as Lt.-Col., Oct. 1st.

The following Capts. are ante-dated in their appts. to April 1st:—M. B. O'Brien, S. S. Macaskie.

Lts. to be temp. Capts. while empld. as Capts.:—H. L. Woolveridge, June 1st; C. H. Stonham, from (A.), Sept. 9th; L. G. Hall, from (O.), D. E. B. K. Shipwright, from (A.), Oct. 5th; T. J. Legate, Oct. 9th; H. D. Duncan, from (O.), Oct. 11th.

Lts. to be Lts.:—A. G. Hearnden, from (O.), Sept. 5th; A. L. C. Hartland-Rowe, from (A.), Sept. 18th; T. C. Morgan, from (K.B.), Sept. 30th; Lord G. H. Foley, from (A.), Oct. 12th; L. A. Christian, from (O.), Oct. 19th.

Sec. Lts. to be Lts. while empld. as Lts.:—E. G. Burden, Sept. 23rd; I. Wardle, Oct. 14th.

The following are granted temp. commns. as Lts.:—W. W. Popperwell, April 5th; A. S. Batchelor (temp. Lt., D. of Corn. L.I.), Sept. 4th; D. B. Collison-Cox (Lt., N. Staff. R.), Sept. 19th; L. H. B. Price, M.C. (Lt., R. W. Fus., T.F.), Sept. 23rd; G. W. S. Dundas (temp. Capt., attd. Rif. Brig.), and to be Hon. Capt., Oct. 3rd; C. R. R. Gidney (Lt., attd. K.R.R.C.), Oct. 8th.

Sec. Lt. F. H. Barratt (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., April 1st.

E. Bell is granted a temp. commn. as Sec. Lt., and to be temp. Lt. while spec. empld., Oct. 4th.

The following are granted temp. commns. as Sec. Lts.:—C. T. H. Page (temp. Sec. Lt., Suff. R., Spec. Res.), June 3rd; H. F. Griffiths, Oct. 16th; F. Williams, Oct. 17th; A. C. Jessop, C. J. Eastaugh, A. E. Webb, T. L. Booth, L. G. D. Caines, G. Burrows, H. E. Young, A. L. Kent, D. McCullock, J. G. Webster, A. H. Wharrier, W. Odam, W. A. Haw, Oct. 21st.

The following relinquish their commns. on ceasing to be empld.:—Capt. G. L. Davidson, D.S.C. (Lt., R.N.), Sept. 25th; Capt. C. Banyard (Lt., R.N.), Oct. 1st.

Capt. H. F. Mills relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Oct. 23rd.

The following Sec. Lts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lt.:—A. G. Rogers, L. A. W. Webb, H. Cornford, A. W. Metge, V. S. Monsell, Oct. 23rd.

Sec. Lt. H. A. P. Coleman resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Oct. 23rd.

Technical Branch.—Maj. S. S. Nevill to be temp. Lt.-Col. whilst empld. as Lt.-Col., Sept. 1st.

Capts. to be temp. Majs. whilst empld. as Majs.:—(Temp. Lt.-Col.) H. B. T. Childs, and relinquishes the temp. rank of Lt.-Col., May 22nd; F. W. Mansell, June 5th; H. L. Rutty, Sept. 7th.

To be temp. Capts. whilst empld. as Capts.:—Sec. Lt. (temp. Lt.) R. J. Paton, Oct. 1st; Lt. F. Susans, Sec. Lt. C. F. Chinery, Oct. 9th.

Lt. (temp. Capt.) R. C. Kean to retain the temp. rank of Capt. whilst empld. as Capt., from (A.), Sept. 24th.

Lt. (temp. Capt.) G. B. Neale reverts to Lt., and relinquishes the temp. rank of Capt., Sept. 23rd.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—(Hon. Lt.) A. J. MacNab, June 25th; R. J. Paton, Aug. 9th; (Hon. Capt.) R. J. Wallace, Sept. 1st; E. E. Crook, A. H. Harrison, B. Cheeseman, J. F. Arnitt, Oct. 9th.

The initials of Lt. H. W. G. Drummond, Brit. Col. Regt., C.E.F., are as now stated and not as in "Gazette," Sept. 27th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—B. W. King, Aug. 9th; H. N. McL. Roberts, Sept. 17th; A. E. Davies, Sept. 26th.

Sec. Lts. (Admin.) to be Sec. Lts.:—A. S. Crosby, July 1st; S. F. Blanck, Aug. 10th; H. A. Parsons, Aug. 22nd; H. L. Jones, Sept. 6th; E. G. Davidson, Sept. 8th; L. Henri E. B. Addison, C. F. P. Davies, W. S. Steljes, Sept. 21st; W. H. Johnson, R. C. Bookless, R. H. Clarke, Sept. 26th; H. H. Peppercorn, Sept. 28th; C. J. Beardow, Sept. 30th; E. E. Blake, Oct. 1st; R. G. B. Blanchard, Oct. 2nd; T. Mitchell, Oct. 7th.

The following are granted temp. commns. as Sec. Lts.:—R. G. Campbell (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., K. Mines (temp. Sec. Lt., R.E.), Sept. 21st.

W. Randall (Lt., Middx. R.), and to be Hon. Lt., Sept. 28th.

Lt. J. B. Saer to be Lt., from (Admin.), Sept. 28th.

Lts. (A.) to be Lts.:—G. E. F. Elliott, Sept. 19th; C. M. Kelly, Oct. 7th.

Sec. Lt. A. C. Smith (commnd. Shipwright, R.N.) relinquishes his commn. on ceasing to be empld., Sept. 23rd

Sec. Lt. V. H. Appleyard relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct 23rd.

Medical Branch.—Lt. F. H. Wallace to be Capt., Oct 1st.

Admin. (Med.).—Lt. G. G. Coury, V.C., to be temp. Capt. while empld. as Capt., Sept. 30th.

Memoranda.—Lt.-Col. (temp. Brig.-Gen.) F. L. Festing, C.M.G., to be Col., and to retain his temp. rank, Oct. 14th.

Capt. J. Andrews (late R.N.A.S., Oct. 1st, 1915) relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Oct. 23rd.

E. Duveen (late Lt, Hon. Capt.) is granted the hon. rank of Capt., June 1st.

War Office, Oct. 24th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—

Sqdn. Comdr.—Lt. (temp. Capt.) C. D. Fuller, R. Suss. R., from a Flt. Comdr., and to be temp. Maj. whilst so empld., Feb. 1st, 1918.

Air Ministry, Oct. 25th

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Staff Officer, 1st Cl.—Lt.-Col. C. R. Finch-Noyes, D.S.O., Sept. 10th.

Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld.:—(T.) W. A. Legg (temp. Capt., R.E.), and is granted a temp. commn as Capt., Capt. R. H. Parkinson, April 1st; (Q.) Capt. J. Rylands, Oct. 1st.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld., if not already holding that rank:—Lt. (Hon. Capt.) W. T. Taylor (date of first commn., Sept. 30th, 1915), June 12th; (T.) Sec. Lt. (temp. Capt.) H. F. L. Dixon, July 1st; R. H. H. Watson (temp. Lt., R.E.), and is granted a temp. commn. as Lt., Sept. 2nd.

The following temp. appts. are made:—Staff Officers, 2nd Cl.—And to be temp. Majs. whilst so empld., if not already holding that rank:—Capt. G. K. Macdonald, vice Capt. (temp. Maj.) C. C. Dailey, who relinquishes the temp. rank of Maj., Oct. 8th; (P.) Capt. (temp. Maj.) E. W. Forbes, M.C., vice Capt. (temp. Maj.) R. L. Kennedy, who relinquishes the temp. rank of Maj, Oct. 11th; (Q.) Capt. (temp. Maj.) E. H. Cockburn, vice Capt. (temp. Maj.) A. W. MacIlwaine who relinquishes the temp. rank of Maj., Oct. 24th.

Staff Officers, 3rd Cl.—And to be temp. Capts. whilst so empld., if not already holding that rank:—Lt. (temp. Capt.) I. H. P. McEwen, Aug. 23rd; Lt. R. R. Frecheville, Aug. 24th; Capt. T. E. Withington, vice Capt. G. K. Macdonald, Oct. 8th; (T.) Sec. Lt. D. C. Sutherland, July 4th.

Staff Lt., 2nd Cl.—Capt. S. T. Ravenscroft (May 15th to Sept. 19th)

Flying Branch.—Lts. to be temp. Capts. while empld. as Capts. (A.):—C. G. H. Wadleigh, M. W. Richardson, Sept. 16th; E. A. Simson, Oct. 1st; H. J. Miles, G. Milner, Oct. 4th; E. J. Stephens, Oct. 6th; E. L. Bishop, M.C., H. J. Duncan, M.C., E. Mycock, Oct. 8th; F. C. U. Dymant, Oct. 9th; S. W. Cowper-Coles, Oct. 12th; G. W. T. Glasson, Oct. 15th.

Sec. Lt. J. H. Sprott to be temp. Capt. while empld. as Capt. (A.), Oct. 2nd.

Capts. to be graded for purposes of pay as Capts. (A. and S.) while so empld.:—C. H. Fitzherbert, R. R. Soar, Oct. 1st.

Lt. R. B. Gibb to be temp. Capt. while empld. as Capt. (Dir.), Oct. 17th.

Lt. J. M. McCleerey to be temp. Capt. while empld. as Capt. (S.), Oct. 8th.

Lts. to be Lts. (A.) from (Obsr. Officers):—E. S. Jacobs, Sept. 8th; E. R. Stranger, Sept. 12th; F. R. D. Wickham, Sept. 24th; W. A. Duncan, W. D. Vernon, Sept. 27th; L. C. Diespecker, M.C., Sept. 28th; W. J. Walsh, Sept. 29th; H. K. Thompson, H. G. P. Ovenden, C. L. Silvester, R. T. Shepherd, E. M. Slatter, Sept. 30th; K. E. Ward, Oct. 1st.

Lt. C. A. McConchie to be Lt. (Dir.) from Obsr Officer, Sept. 5th (substituted for notification in "Gazette," Oct. 1st).

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.):—C. O. Smith, Sept. 3rd; H. C. Traver, Sept. 12th; G. W. Porter, A. Popini, Sept. 16th; W. H. S. Gee, Sept. 25th; L. Hollingsworth, F. A. Douglas, E. Head, J. E. Phelps, Sept. 27th; C. V. Wood, A. E. H. Sinclair, C. F. W. Toone, F. James, L. S. Clarke, A. G. Cunningham, A. Harman, Sept. 28th; W. R. Bannister, E. E. Fresson, C. C. S. Preston, J. P. Skredlant, W. Drage, F. H. Thirkell, J. A. Spark, J. Huson, R. N. Webster, H. H. Smith, Sept. 29th; G. Jennings, J. E. Taylor, H. P. Johnston, J. C. Holdsworth, F. V. Riley, E. A. Pudney, S. T. Goodnoh, G. P. Kells, H. J. Cramphorn, S. A. Slater, C. E. Baumhofer, R. L. Brown, A. T. Start, D. Miller, F. L. Smith, R. Smith, A. Lawlor, S. P. F. D. R. Rust, L. H. Howard, F. Stringer, A. Martin, C. L. Wilson, G. R. Hodgkison, G. W. Harvey, E. K. Dashwood, G. D. Stewart, F. H. Simon, W. Redmond, Sept. 30th; H. I. Nicholl, R. H. Fotheringham, J. L. Boyd, F. Dixon, L. W. Seaby, Oct. 1st; H. L. Howel, Oct. 2nd; J. V. Flanagan, Oct. 3rd.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts (A.):—R. P. Dennistoun, July 22rst; R. S. Auden, C. St. A. Begg, F. L. Southgate, P. F. A. Curtis, Sept. 27th; W. Y. Gothorp, R. H. Ash, Sept. 28th; J. N. Dean, E. L. Evans, J. A. Tyacke, E. W. Berry, Sept. 29th; A. P. Besley, F. W. A. Dawkins, E. J. Whitwell, Sept 30th.

The following are granted temp. commns. as Sec. Lts. (A.):—G. H. Bisaillon (Lt. Can. Fors. Corps), and to be Hon. Lt., Sept. 24th; F. Lloyd (Sec. Lt., Worc. R., Spec. Res.), C. Kipling (temp. Sec. Lt., Middx. R.), J. W. Hawley (Sec. Lt., Yorks L.I., T.F.), C. N. Yeoman (temp. Sec. Lt., S. W. Bord. R.), P. C. Hoyle (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., R. M. C. Smith (temp Sec. Lt. Rif. Brig., Sept. 27th; S. S. Owen (Lt., Columbia R., C.E.F.), and to be Hon. Lt., T. St. J. H. Silvester (Sec. Lt., Ches. R., Spec. Res.), A. R. Turner (Sec. Lt., York and Lanc. R., Spec Res.), W. E. Gandell (temp. Sec. Lt., Essex R.), S. W. Taylor (temp. Lt., E. Surr. R.), and to be Hon Lt., P. E. Thomas (temp. Sec. Lt., Northn. R.), Sept. 28th; J. P. Stewart-Burton (Sec. Lt., Devon R.), W. I. L. Legg (Sec. Lt., K. Lpool. R., T.F.), Sept. 29th; H. W. Frith (Lt., Camb. R., T.F.), and to be Hon Lt., W. W. Baker (temp. Sec. Lt., Hamp. R.), R. D. King (Lt., R. Fus., T.F.), and to be Hon. Lt., H. B. Wood (Lt., R.F.A.), and to be Hon. Lt., N. J. Watson (Lt., K.R.R.C., Spec. Res.), and to be Hon. Lt., C. A. Morris (Sec. Lt., K. Lpool. R., T.F.), W. A. Scarlett (Sec. Lt., R. W. Kent, T.F.), H. G. Little, (temp. Sec. Lt., S. African Arty.), M. H. Tisdall (Lt., Som. L.I.), and to be Hon. Lt., J. A. Stewart (temp. Sec. Lt., High. L.I.), R. G. Wilson (Sec. Lt., Lancs. Fus., T.F.), W. McKay, (Lt., E. Ontario R., C.E.F.), and to be Hon. Lt., A. H. Lumsden (temp. Sec. Lt., Oxf. and Bucks L.I.), F. J. Bodenham (temp. Sec. Lt., Leins. R.), R. H. Whittaker (Lt., C. Ont. R., C.E.F.), and to be Hon. Lt., Sept. 30th; J. Milton (temp. Sec. Lt., D. of Corn. L.I.), J. W. Patterson (Sec. Lt., K. Lpool R., T.F.), H. T. Burt (Sec. Lt., R.F.A., Spec. Res.), W. P. Jolly (temp. Sec. Lt., attd. Rif. Brig.), Oct 1st; J. H. B. Rygate (Sec. Lt., Dragoon Gds.), Oct. 2nd); H. C. Hawkins (Sec. Lt., R.F.A., Spec. Res.), Oct. 3rd; G. I. Packman, Oct. 22nd.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A.):—A. J. Fraser, L. C. Wilcocks, E. S. McNames, E. G. Peter, Oct. 9th; G. O. Thompson, Oct. 10th; S. E. Wood, J. E. S. Dunham, A. F. B. Brodbeck, R. W. Cawston, C. J. Green, Oct. 11th; L. F. Cubitt, R. B. J. Daville, Oct. 12th; A. E. Newall, Oct. 13th; S. V. Pearce, J. A. Shipton, Oct. 14th; J. C. Carson, Oct. 15th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—P. D. Anderson, H. C. W. Weston, A. J. Wilson, B. H. Wooler, July 6th; C. R. E. Wakefield, July 22nd; B. H. Henwood, Aug. 17th; E. A. Thompson, J. P. Bernadie, Aug. 3rd; R. H. Rosenthal, Sept. 7th; A. P. Leslie, Oct. 14th.

J. Edwardes, M.C. (temp. Lt., attd. Welsh R.), is granted a temp. commn. as Sec. Lt. (K.B.), and to be Hon. Lt., May 10th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts.(K.B.):—J. R. Jones, Sept. 24th; E. E. James, Oct. 15th; V. A. Eyles, W. Turner, Oct. 17th.

G. W. Mitchell (Sec. Lt., E. York R., T.F.), is granted a temp. commn. as Sec. Lt. (Obsr. Officer), Aug. 16th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts (Obsr. Officers):—

W. H. Taylor, S. G. Squires, E. N. Andrews, J. E. Prosser, Sept. 28th; W. H. Welsh, T. A. Scowcroft, J. T. R. Wynn, Oct 1st; R. A. G. Beschen-Kowsky, W. Hopkins, F. G. Rossiter, H. Town, E. May, Oct. 11th; W. S. McDonald, F. D. R. McLaren, W. L. Minter, P. G. Horlington, Oct. 14th; A. L. B. Rees, E. St. M. C. Weinman, Oct 19th; W. J. B. Penman, Oct. 20th; R. D. Court, A. R. M. Gunning, R. Roberts, T. Townson, F. R. James, G. W. Minto, G. Boyer, Oct. 23rd.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (S.):—G. A. Hood, Oct. 1st; E. C. Collymore, Oct. 3rd.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (S.):—S. J. Smetham, R. G. Spencer, Oct. 2nd.

The following relinquish their commns. on ceasing to be empld.:—Lt. S. W. Mills (Lt., R.F.A., T.F.), Sept. 23rd; Lt. H. McKenzie, Sept. 30th; Sec. Lt. F. L. Peploe, Oct. 26th.

Maj. M. McB. Bell Irving, D.S.O., M.C., relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Maj., Oct. 26th.

Lt. (Hon. Capt.) M. W. H. Evans resigns his commn. in order to resume his medical studies, and is granted the hon. rank of Capt., June 26th.

Lt. (Hon. Capt.) R. Corbett (Capt. W. Som. Yeo., T.F.), relinquishes his commn. on account of ill-health caused by wounds, Oct 26th.

Lt. W. F. Robinson resigns his commn in order to resume his medical studies, and is granted the hon. rank of Lt., Oct. 26th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—R. F. P. Abbott, J. Fleming, Oct. 26th.

Lt. R. H. Lloyd relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Oct. 26th:—

Lt. W. J. Walker relinquishes his commn. on account of ill-health and is granted the hon. rank of Lt., Oct. 26th.

Lt. W. J. E. Griffiths (Can. F.A.), relinquishes his commn. on account of ill-health contracted on active service, Oct. 26th.

Lt. A. H. Santa Maria resigns his commn., and is granted the hon. rank of Lt., Oct. 26th.

Sec. Lt. H. W. Leyland relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct. 26th.

The following Sec. Lts. relinquish their commns., having been found physically unsuited for the duties of Pilots or Obsrs.:—A. H. Bliss, A. C. S. Hawkins, A. E. Turffrey, Oct. 26th.

The date of appt. of Sec. Lt. C. C. Worboys is ante-dated to July 6th.

The dates of appt. as Sec. Lts. (A. and S.) are ante-dated as stated against their names:—

C. S. Gregg, April 12th; T. Whitman, May 1st; A. J. F. Ross, Aug. 18th.

The initials of Sec. Lt. F. G. Coulson are as now described, and not as stated in the "Gazette" of Oct. 11th.

The notification in "Gazette," July 2nd, concerning Lt. C. R. O'Hagan is cancelled.

The notification in "Gazette," Oct 1st, concerning Sec. Lt. T. A. Evans is cancelled.

The notification in Gazette, Sept. 17th, concerning Sec. Lt. W. B. Day is cancelled.

The notification in "Gazette" of Aug. 20th concerning Sec. Lt. C. H. Moss is cancelled.

The notification in "Gazette," Oct. 1st, concerning Sec. Lt. F. C. Dixon, Manch. R., is cancelled.

The notification in "Gazette," Sept 24th, concerning Sec. Lt. J. C. Stone is cancelled.

The notification in "Gazette," Sept. 10th, concerning Sec. Lt. B. E. Taylor is cancelled.

The notification in "Gazette," July 30th, concerning P.F.O. J. E. Greenwell is cancelled.

The notification in "Gazette," July 16th, concerning Lt. J. E. Edwards, M.C., Welsh R., is cancelled.

The notification in "Gazette," July 30th, concerning P.F.O. S. E. Whitley is cancelled.

The notification in "Gazette," June 11th, concerning P.F.O. E. M. Ackery is cancelled.

The notification in "Gazette," Sept. 20th, concerning Sec Lt. J. Hart is cancelled (substituted for notification in "Gazette," Oct. 11th)

The initials of G. Chillingworth are as now described, and not as in "Gazette," Sept. 6th.

The surname of A. L. Fachnie is as now described, and not as in "Gazette," Sept. 17th.

The surname of R. Reid Thomson is as now described, and not as in "Gazette," Sept. 6th.

The surname of L. H. McHarg is as now described, and not as in "Gazette," Sept 6th.

The surname of James Henry Sprackling is as now described, and not as in "Gazette," Sept. 13th.

Administrative Branch.—Maj. L. P. Walker to be Maj., from (T.), Oct. 14th.

Capts. to be temp. Majs. whilst empld. as Majs:—E. E. R. Heathcote, Oct. 7th; J. Fowler, Oct. 14th.

Capt. S. T. Ravenscroft to be Capt., from (S.O.), Sept. 20th

Capt. A. H. W. Wall, M.C., to be Capt., from (T.), Sept. 30th.

The following are granted temp. commns. as Capts.:—G. S. Ridgway (Lt., R.N.), June 20th; A. A. Gawn (Hon. Capt., A.P.D., ret. pay), Oct. 25th.

Lts. to be temp. Capts. whilst empld. as Capts.:—(Hon. Capt.) J. W. Higgins, A. McIntosh, April 1st; (Hon. Capt.) L. V. Popkiss, July 9th; F. E. Hobley, Sept 1st; (Hon. Capt.) C. H. Lewis, Sept. 13th; H. C. Griffith, Oct. 4th.

Sec. Lt. (temp. Lt.) H. W. Prockter to be temp. Capt. whilst empld. as Capt., June 30th.

Lts. (A.) to be Lts.:—J. U. G. Lamond, Aug. 1st; T. M. Jones, Sept.

(Continued on page 1628.)

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A REPORT ON THE 200 H.P. AUSTRO-DAIMLER AERO-ENGINE.

The following Report on the Austro-Daimler Engine is published by the kind permission of the Technical Department of the Air Ministry, to whom the thanks of the Editor are due.

INTRODUCTORY NOTE.

The following detailed report on the design, construction, and general performance of the latest type of Austro-Daimler engine is based on an examination and tests carried out at the R.A.E. on the engine (No. 19,218) taken from a captured Austrian "Berg" Scout (R.A.F. No. A.G.6).

This machine, a single-seater biplane brought down on the Italian Front in April, 1918, was captured in very good condition; the engine had apparently only been in use for a few hours.

With the exception of its high stroke: bore ratio and the construction of a detachable inlet valve seating in each cylinder, the design of this engine shows no great resemblance to the earlier types of Austro-Daimler engines; generally speaking, the new 200 h.p. Austro-Daimler possesses more than the usual amount of originality in design found in enemy aero engines.

The general construction of the 200 h.p. Austro-Daimler is shown in the two photographs of the complete engine, Figs. 1 and 2, and also in the accompanying cross sectional and general arrangement drawings.

Following the usual German practice, the engine is of the six-cylinder, vertical, water-cooled type with separate built-up steel cylinders. The principal characteristics of the design and its general performance are given in the following leading particulars of the engine:—

Number of cylinders	Six, vertical
Bore	135 mm.
Stroke	175 mm.
Normal b.m.e.p.	123.3 lbs. per sq. in.
Average b.h.p. and speed	200 b.h.p. at 1,400 r.p.m.
Compression ratio	5.02 :1

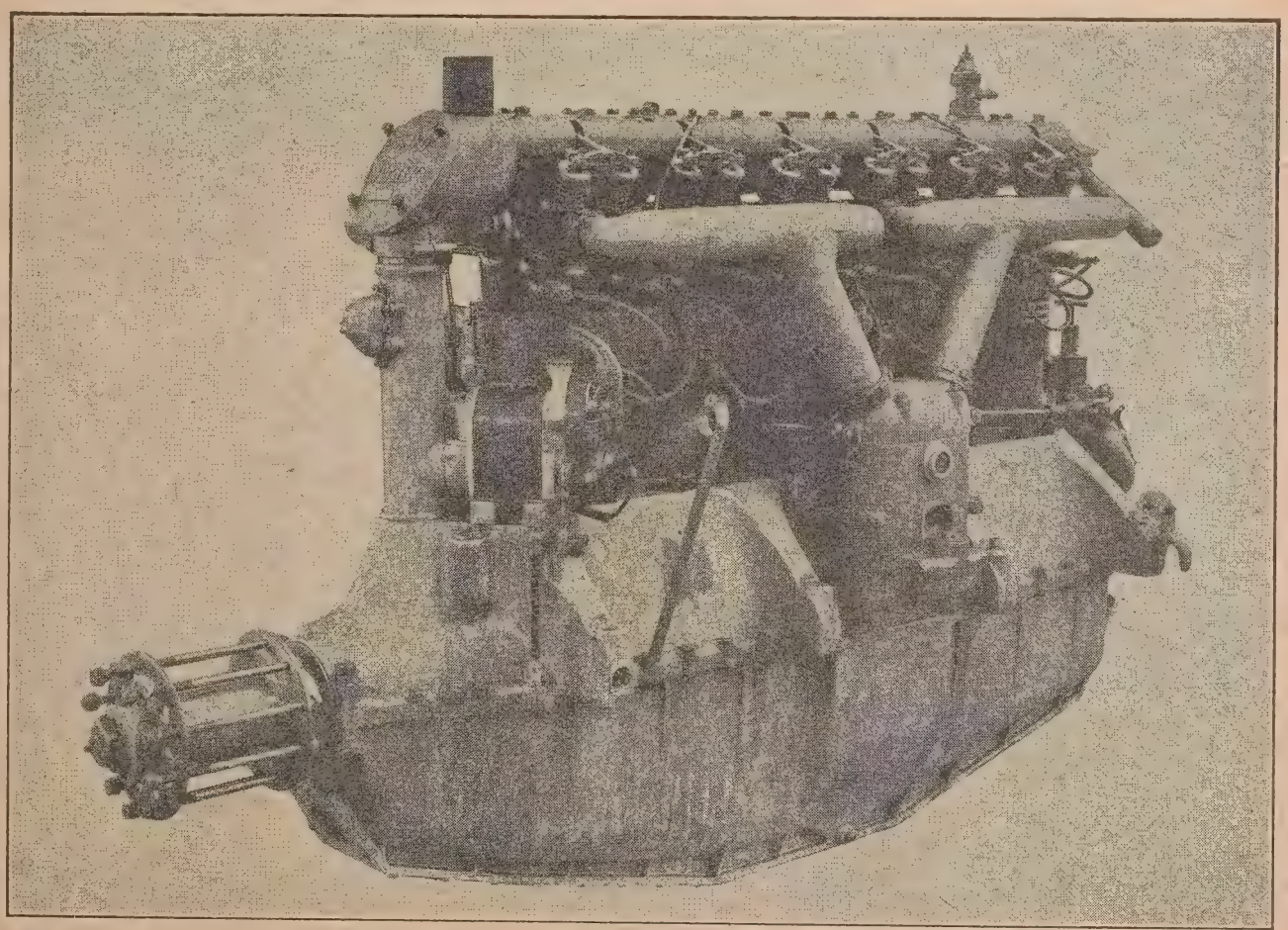


Fig. 1.—The 200 H.P. Austro-Daimler Engine (Inlet Side).

Petrol consumption per hour	111.0 pints
Petrol consumption per b.h.p. hour ...	0.555 pints
Oil consumption per hour	7 pints
Oil consumption per b.h.p. hour	0.035 pints
Total weight of engine, dry	728.5 lbs.
Weight per b.h.p. (normal)	3.64 lbs.

The compression ratio is considerably higher than that of any of the enemy engines except the Maybach, and from the complete data published at the end of this report it will be seen that the general efficiency of the engine is good, the h.p. per cu. ft. of stroke volume being 377.3 and the h.p. per sq. ft. of piston area being 216.6.

During calibration and endurance tests carried out at the R.A.E., the running of the engine was very good, being very steady between 700 and 1,700 r.p.m. The engine was remarkably clean, having no trace of oil or water leakages during tests.

Compared with the usual high weight standard of enemy engine design, the weight per b.h.p. of 3.64 is quite normal. From our own standard of weights, however, the weight per b.h.p. is disproportionately high. This is chiefly due to the heavy construction of the crank-chamber and oil base, rather than to the design of the cylinders and reciprocating parts, which are well designed and are of light construction compared with other enemy engines.

General Description.

As a preliminary survey of the general design of the 200 h.p. Austro-Daimler engine, the principal features of the engine are briefly described in the following summary:—

The six separate cylinders are of the usual built-up steel construction with pressed steel water jackets, and are fitted with twin inlet and exhaust valves in the cylinder heads, which are integral with the cylinder barrels. The valve pockets are welded into position, with the exception of one inlet valve pocket in each cylinder, which is constructed so as to be easily detachable with its valve seating and guide, as in previous Austro-Daimler engines, so that all the valves can be removed without dismounting the cylinder.

Aluminium pistons are adopted, and, with the exception of those recently fitted to the 230 h.p. Benz engines, were at the time of capture apparently the only aluminium pistons in use in enemy engines, although since this engine was captured a Rumpler biplane has been brought down fitted with a 270 h.p. Bassé-Selve engine using aluminium pistons. A detailed report of this engine is in course of preparation and will be published very shortly.

The H section connecting rods are of normal design, and the crankshaft runs in seven white metal bearings, which are carried by the top half of the crankcase. The bottom halves of the journal bearing housings are steel forgings and are very deep in cross section, being similar in design to the journal bearings fitted to the Maybach engines.

The design of the valve gear and camshaft drive presents several interesting details. As shown in the illustrations of the engine, the overhead camshaft is driven by a vertical shaft off the front end of the crankshaft. The camshaft runs in four phosphor bronze bearings in the centre of an aluminium camshaft case.

A compression release gear, very similar to the Mercédès type, is provided. The water circulation passage from the cylinders to the top of the radiator is taken through to the front end of the cast aluminium camshaft-casing, just behind the driving bevel gear.

A reciprocating plunger type oil pump is fitted in the front end of the oil base. This pump is driven by bevel and worm gearing directly off the crankshaft and is unusually heavy, but of interesting design.

The lubrication is on normal principles and embodies a large air-cooled oil sump at the bottom of the base chamber, which is supplemented by an auxiliary fresh oil reservoir cast in the front end of the top half of the crank chamber. The fresh oil is delivered by a small auxiliary plunger, working in conjunction with the main oil pump, to the front end of the camshaft, the lubrication of which is well carried out.

A "V" type honeycomb radiator is fitted directly behind the airscrew, and the centrifugal water pump, which is driven

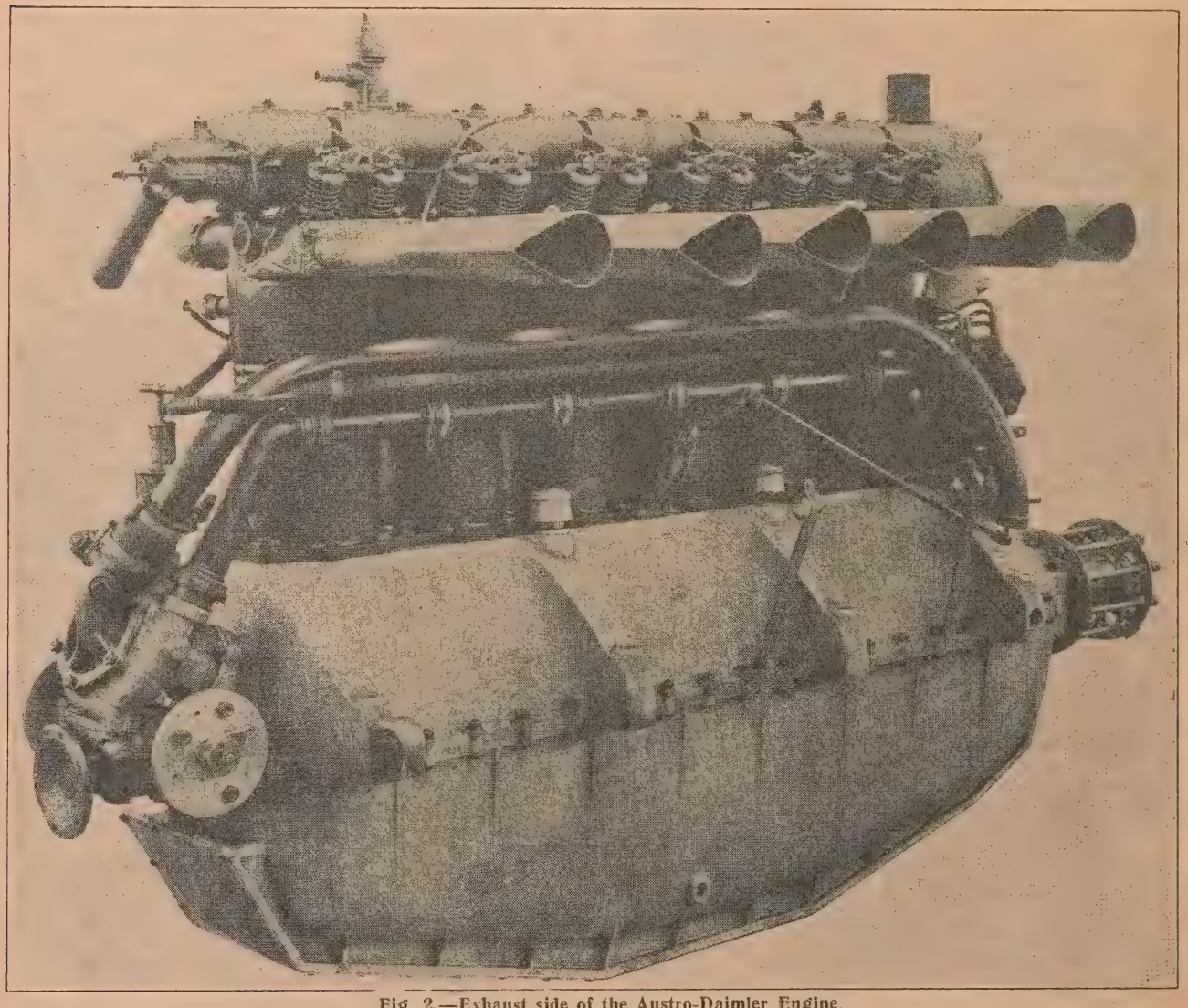


Fig. 2.—Exhaust side of the Austro-Daimler Engine.

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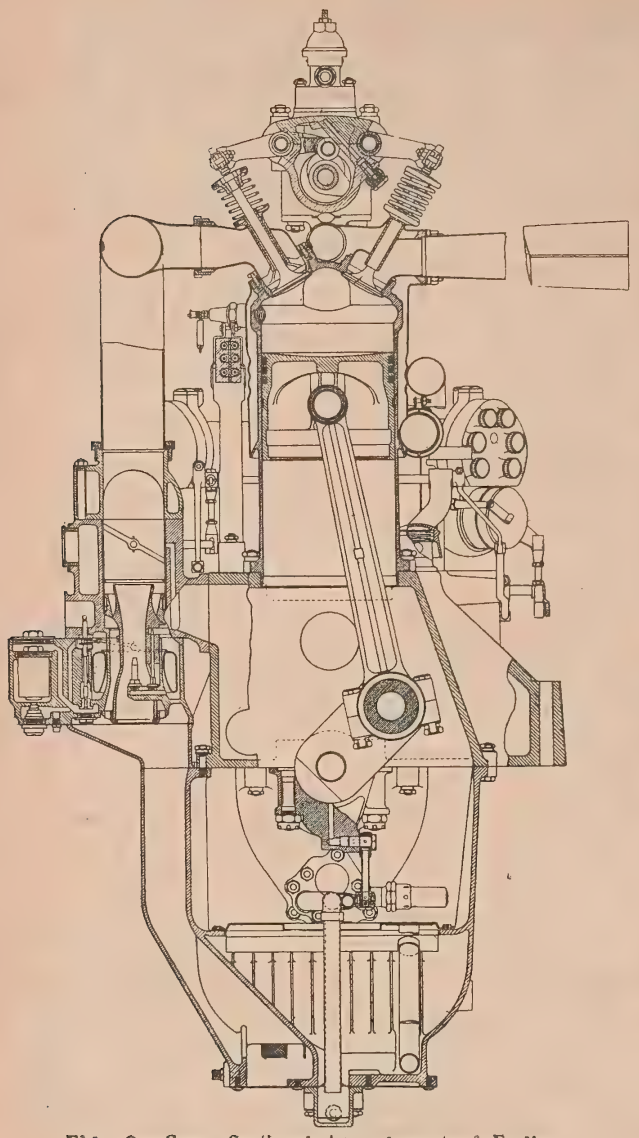


Fig. 3.—Cross Sectional Arrangement of Engine.

obliquely off the rear end of the crankshaft, is of ordinary design.

Two Bosch Z.H.6 magnetos are driven diagonally at 52 degs. off the vertical camshaft driving shaft at the front of the engine, and two plugs are provided in each cylinder. The magneto controls are interconnected with the throttle control, so that the ignition is automatically retarded when throttling down.

A heavy duplex carburetter feeds the cylinders through two separate steel induction manifolds, which are galvanised, and lagged with asbestos; each manifold feeds three cylinders.

The carburetters are water-jacketed and heated by the cylinder water circulation system in the usual way.

Main and slow running jets are fitted, the two annular floats being housed in chambers surrounding the choke tubes. The main air intake is taken through a passage cast in the two halves of the crankcase, leading to the chamber below the false bottom of the oil sump.

An air pump of the spring plunger type is driven off the camshaft and is mounted on the top of the camshaft casing towards the rear end of the engine. A transverse shaft driven off the rear end of the crankshaft carries two cams for the synchronised gun interrupter gear.

No exhaust manifold is provided, each cylinder being fitted with a short streamline section exhaust pipe about 12 ins. long, as shown in the illustrations of the engine.

Details of Construction.

Cylinders.

The six separate cylinders are made entirely of steel. The cylinder barrels, which are integral with the heads, are built up of steel forgings. The barrels are machined all over, and are ground to 135 mm. bore; the thickness of the cylinder walls tapers on the outside from 3.0 mm. at the centre to 4.0 mm. at the top, and 4.0 mm. at the base. The water-jackets are pressed

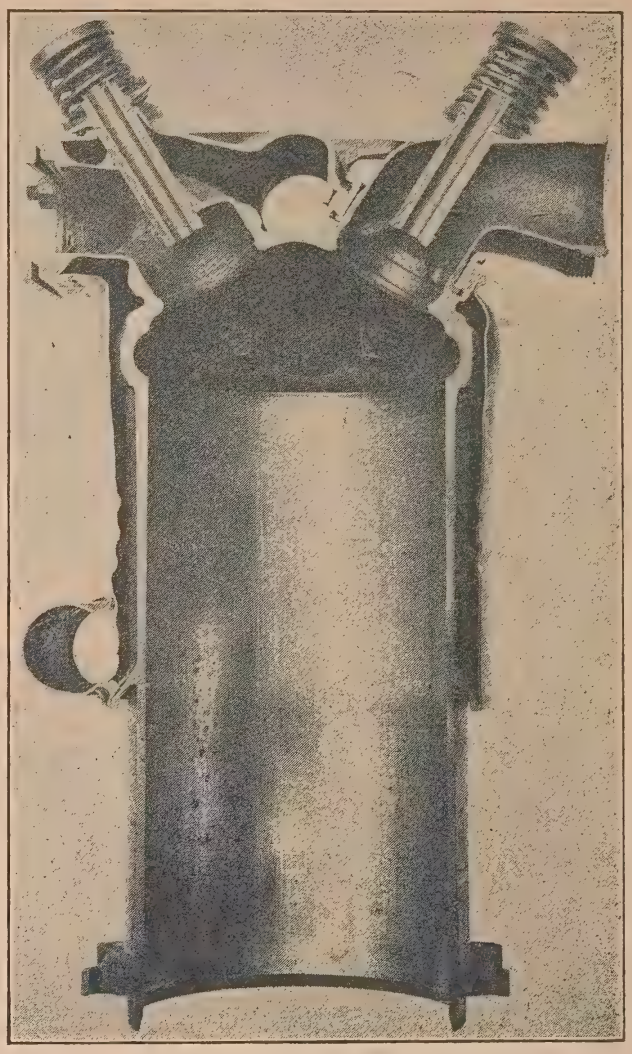


Fig. 4.—Sectional View of Cylinder.

in the usual way from sheet steel 1.0 mm. thick, and are very short. The bottom of each water-jacket is flanged over and welded to a bevelled flange, which is machined on the cylinder barrel, as shown in the sectional photograph of the cylinder, Fig. 4; three annular corrugations are formed in the water-jackets to allow for expansion.

Two inlet and two exhaust valves are fitted in each cylinder head, and work at an angle of 30 degs. to the vertical axis of the cylinders. These are clearly shown in the cross sectional drawing of the engine, Fig. 3, and in the detail drawing, Fig. 6.

In each cylinder two of the exhaust pockets and one of the two inlet pockets are pressed and welded into the head. The other inlet valve, with its seating and guide, is carried in a separate detachable pocket, fixed in position by a large gun-metal union nut, as in previous Austro-Daimler and Beardmore engines. This allows the other valves to be withdrawn from the cylinder through the opening left on the removal of the pocket, without disturbing the cylinder.

The flanges at the base of the cylinders are 11.0 mm. thick, and the cylinder spigots extend 15 mm. into the crankcase. Lugs are machined in the base flange of each cylinder to take the eight studs which bolt each cylinder to the crankcase. Four of the studs are of larger diameter, i.e., 19.0 mm., and pass through the crankcase upper half; they act as main holding-down bolts and

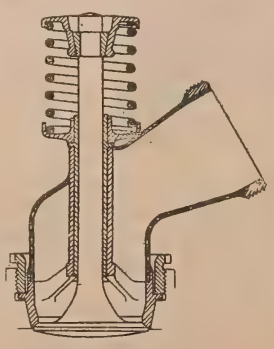


Fig. 5.—Detail of Detachable Inlet Valve Pocket. One of these is fitted to each Cylinder, and allows the other Valves to be withdrawn without disturbing the Cylinder.

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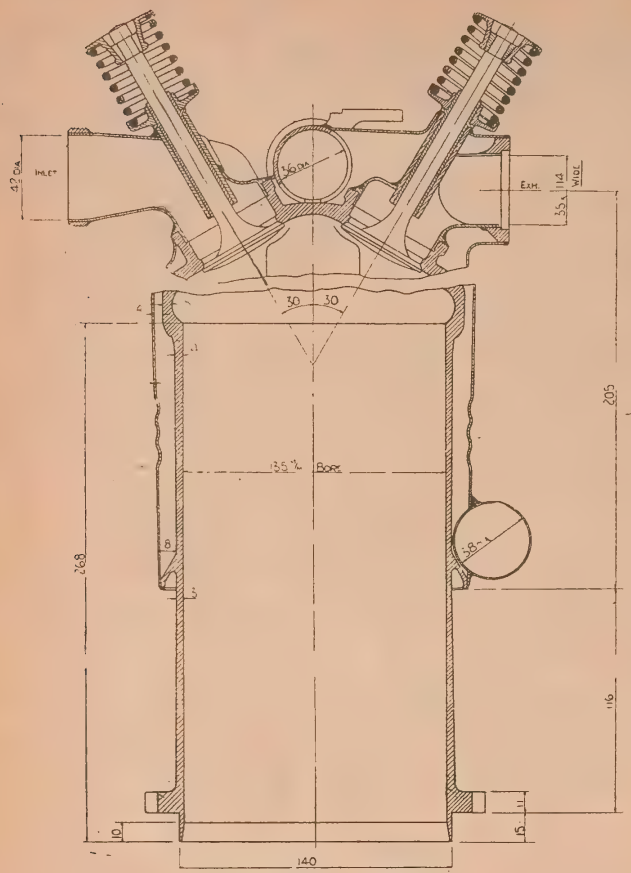


Fig. 6.—Details of Cylinder.

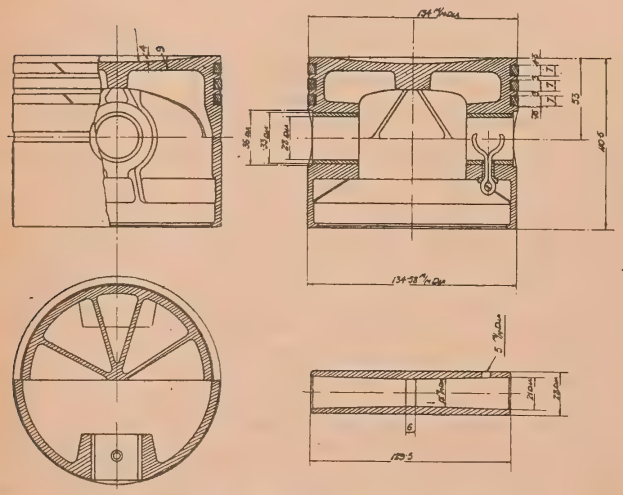


Fig. 8.—Details of Piston and Gudgeon Pin.

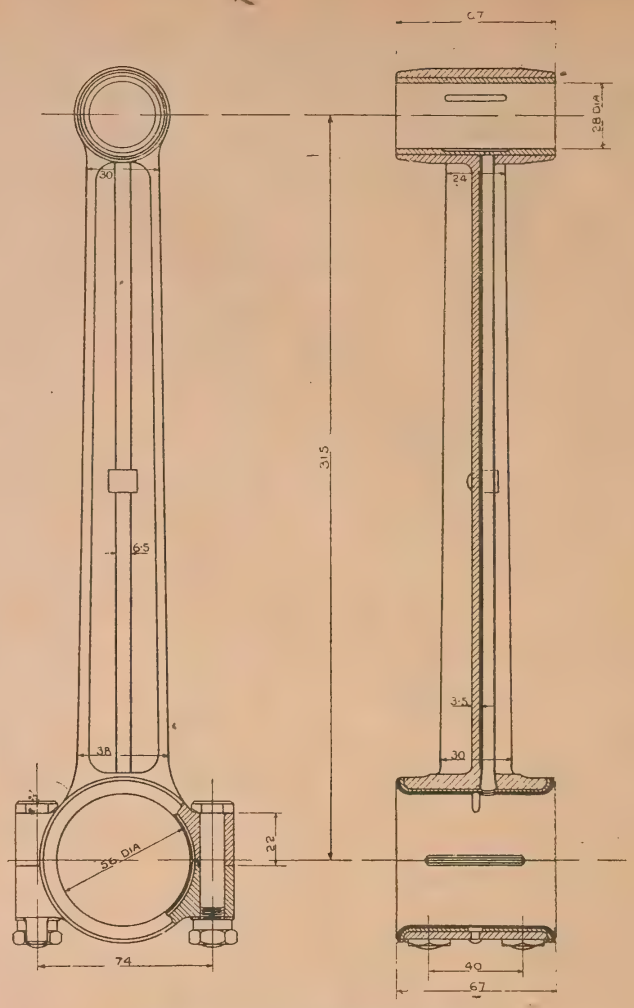


Fig. 9.—Details of Connecting Rod.

secure the lower portion of the journal bearings, thus relieving the crankcase of most of the working stress.

The total weight of each cylinder, bare, is 18.4 lbs.

Pistons.

These are of cast aluminium; the crowns are very slightly concave, and are supported by eight radiating ribs, as shown in detail in the sectional drawing and photographs, Figs. 7 and 8. It will be noticed that these ribs are not spaced equidistantly, the two ribs over each of the gudgeon pin bosses being closer together, and extending downwards so as to support each boss from below.

This design undoubtedly provides a much better distribution of the stress than in the design of the new 230 h.p. Benz aluminium pistons. Steel bushes are cast into the gudgeon pin bosses in the pistons, and the gudgeon pin is fixed only by a large split pin, which passes through a hole drilled in the boss; these holes are also fitted with steel bushes.

Three plain cast-iron rings are fitted above the gudgeon pins, and an annular groove is machined around each piston on the gudgeon pin level for lubrication.

The weight of each piston is 3.52 lbs. with rings, and the weight of each gudgeon pin is 0.66 lb.

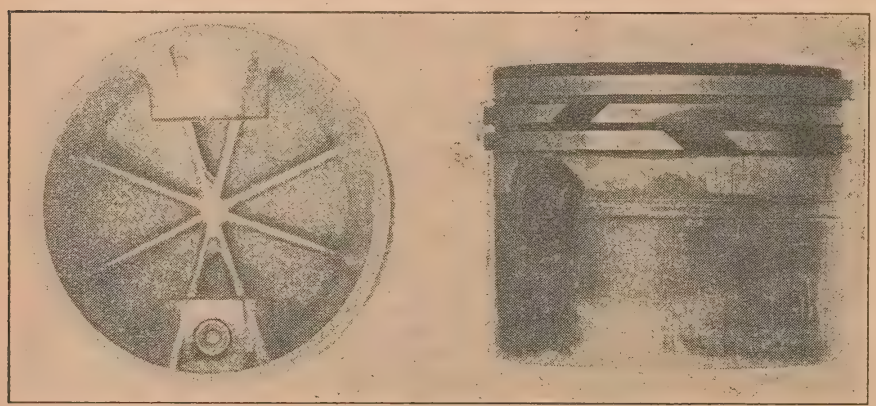


Fig. 7.—Aluminium Piston.

Connecting Rods.

The connecting rods are of H section and exceptionally long for the size of the engine; from the German standard of weight they are of comparatively light section, but the central webs of the rods are not drilled. Four bolts are used to hold the halves of the big-end bearings. These bolts are 10 mm. dia., and each pair is locked by a sheet steel clip.

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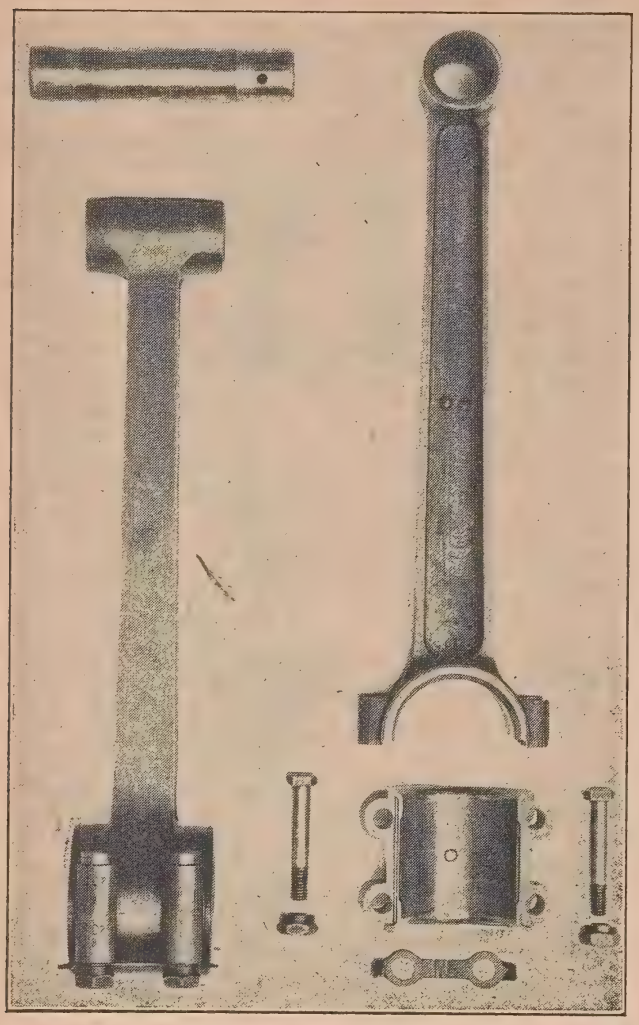


Fig. 9a.—Connecting Rod, Gudgeon Pin, and dissected Big End.

1 mm. thick, and the small ends are fitted with phosphor bronze bushes for the gudgeon pin bearings, which are lubricated by small diameter pipes attached to the central web of the rods in the usual way. Two horizontal oil grooves are cut in the lower halves of the big-end white metal bearings, and a short transverse oil groove in the top halves, whilst the small-end bushes are provided with three longitudinal oil grooves.

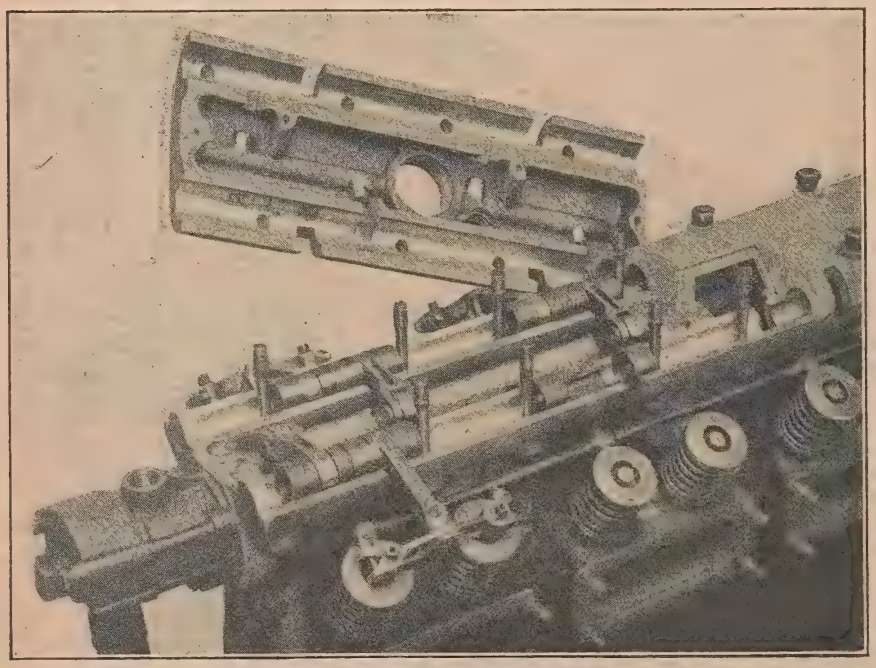


Fig. 10.—View of Valve Gear.

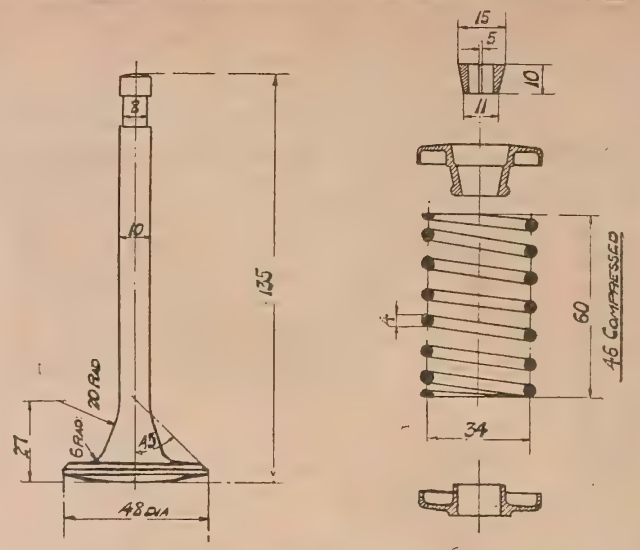


Fig. 11.—Details of Valve and Spring.

Weight of the complete connecting rod ..... = 4.84 lbs.
Weight of big end ..... = 3.18 lbs.
Weight of small end ..... = 1.66 lbs.
Length of connecting rod between centres ... = 315 mm.

Valves and Valve Gear.

The twin inlet and exhaust valves are all of the same dimensions and are interchangeable, and, as previously mentioned, work at 30 degs. to the vertical cylinder axis.

The largest diameter of the valve heads is 48 mm., and the effective diameter is 44 mm., which gives a combined inlet valve opening area of 4.24 sq. ins. The mean gas velocity through the inlet valves is 140 ft. per second.

The general design of the complete valve gear is clearly shown in the sectional drawings, Figs. 3 and 29, and details of the valves and springs are given in Fig. 11.

Single helical valve springs are fitted to each valve, and the valve spring collars are held in position by split cones, which register with the recess cut in the end of the valve stem, as shown in Fig. 11. This spring locking device is similar to that used in the Benz engines.

The valves are operated by a single overhead camshaft, which is carried in an aluminium case, running the whole length of the engine in one piece; this case is attached to each cylinder by two studs screwed into lugs formed in the cylinder heads.

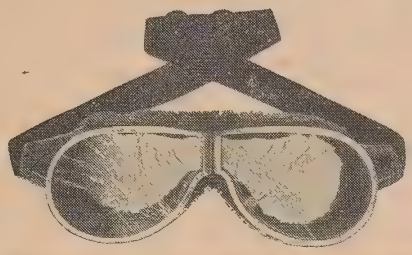
The camshaft runs in four phosphor bronze bearings; these bearings are split and mounted in aluminium housings, and are located in the camshaft casing by small taper grub screws. The cover of the camshaft is in three parts, with very close joints; these detachable covers permit easy access to the valve gear of any or all of the valve rockers and cams.

Each valve rocker spindle is carried in three separate phosphor bronze bushes, which are housed half in the lower portion of the aluminium camshaft casing, and half in the camshaft case cover. For ease of manufacture the boring of the cover and case is carried out as two continuous holes running the whole length of the case, and forming long semi-circular grooves in both halves, in which the valve rocker spindle bearings lie. These bearings are held in position by dowel pegs, and the centre bearing of each set is, of course, split.

With the exception of the bridge pieces, which operate the valve stems, the valve rocker levers are machined from single steel forgings, and the bridge pieces, which carry the adjustable tappet screws, are pressed and riveted on to the ends of the rocker arms against a shoulder. The bridge pieces are prevented from swivelling by being let into a recess cut in the base of the shoulder. The ends of the adjustable tappet screws are hardened, and are fitted with the usual type of transverse locking bolt.

Hardened steel rollers are fitted to the inside arms of the rocker levers, and a deep oil groove is milled in the top of these arms to convey oil

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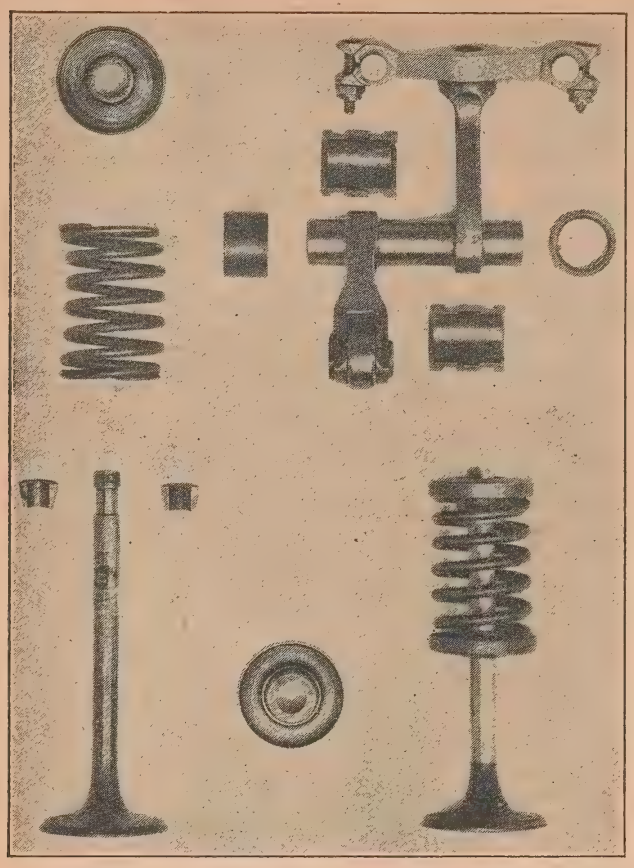


Fig. 12.—Valves and Rockers.

through the hollow spindles to the bearings and also to the cam rollers.

Compression release cams are formed on the exhaust cams, and the lateral movement of the floating camshaft is effected by a long hand lever at the rear end of the engine. This lever is attached to a gun-metal collar, which is fitted with a square thread screw, the design of this compression release gear being very similar to that used on all the Mercédès engines.

The camshaft is driven from the front end (which is quite unusual in enemy engines) through a bevel gear, which floats on eight splines cut on the end of the camshaft. The camshaft vertical driving shaft is driven directly from the front end of the crankshaft by bevel gears. The top end of the vertical spindle runs in a combined thrust and radial bearing, and the lower end (which has six splines cut in it) floats in the lower bevel gear, which with its bearing and housing forms a separate unit, and need not be disturbed when withdrawing the vertical spindle.

DETAILS OF CRANKSHAFT.

Number and type of main bearings	Seven, bronze cage, lined white metal.
Cylinder centres	166.0 mm. (6.53 in.)
Journals.	
Outside diameter	58.0 mm. (2.28 in.)
Inside diameter (front two)	21.0 mm. (0.82 in.)
,, ,, (others)	30.0 mm. (1.18 in.)
Length airscrew end	56.0 mm. (2.20 in.)
,, rear end	43.5 mm. (1.71 in.)
,, centre	50.0 mm. (1.97 in.)
,, intermediate	50.0 mm. (1.97 in.)
Crankpins.	
Outside diameter	56.0 mm. (2.20 in.)
Inside diameter	30.0 mm. (1.18 in.)
Length	68.0 mm. (2.67 in.)
Crank Webs.	
Width	74.0 mm. (2.91 in.)
Thickness (front two)	24.5 mm. (0.96 in.)
,, (others)	24.0 mm. (0.94 in.)
Radius at ends of journals and crank pins	4.5 mm. (0.17 in.)
Weight of complete shaft	96.5 lbs.

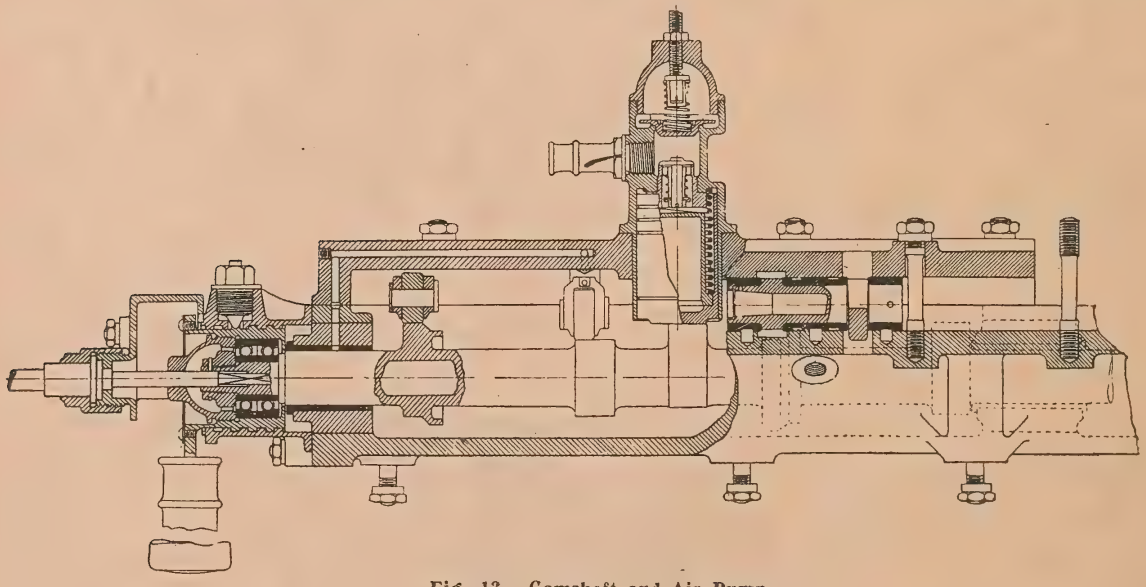


Fig. 13.—Camshaft and Air Pump.

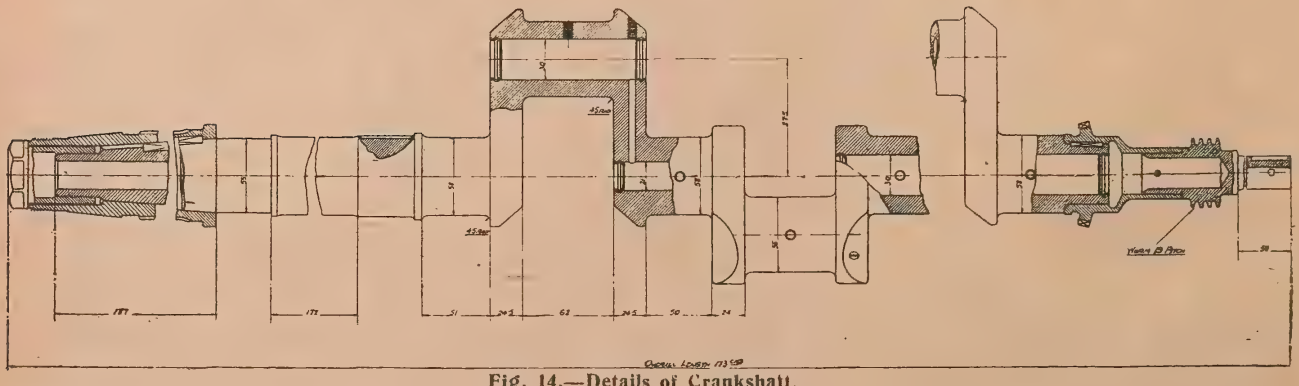


Fig. 14.—Details of Crankshaft.

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The six-throw crankshaft is of normal design and requires little description. The usual type of plain white metal bearings are used. The diameter of the journals is 58 mm. and of the crank-pins 56 mm.; the length of all the journal bearings is 50 mm., with the exception of the front bearing, which is 51 mm.

All the crank-pins and journals are bored 30 mm. dia., except the two front journals, which are 21 mm. bore; and the webs are drilled with 5 mm. oil leads in the usual way for pressure lubrication. Brass discs are used to plug the ends of the holes bored in the journals and crank-pins. These are expanded into grooves cut in the ends of the holes. Other details of the design of the crankshaft are given in the drawing, Fig. 14, and the construction of the front ball bearing and airscrew double thrust race is clearly shown in the general arrangement sectional drawing of the engine, Fig. 29, at the end of this report.

AIRSCREW HUB.

The method of attaching the airscrew hub by serrations cut on the outside of a sleeve which fits onto the tapered extension of the crankshaft follows the original design of the previous Austro-Daimler and Beardmore engines. In other respects the construction of the airscrew hub is of ordinary design, but compared with those used on most other enemy engines the weight of the airscrew hub is considerably below the average—viz., 11.3 lbs.—less the crankshaft extension. Details of the airscrew hub are given for reference in Fig. 15.

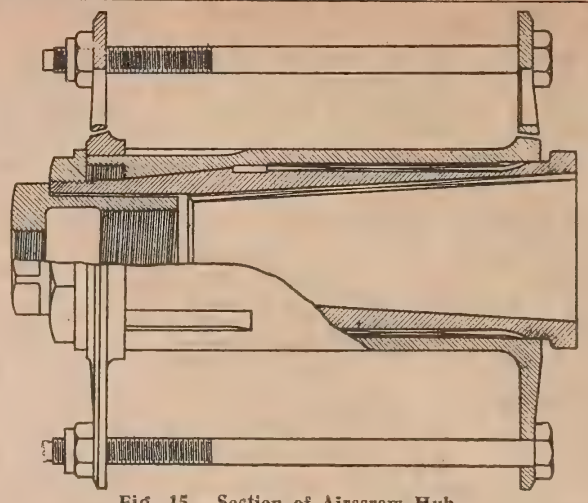


Fig. 15.—Section of Airscrew Hub.

CRANKCASE (TOP HALF).

The construction of the cast aluminium crankcase is proportionally heavy, both in the design of the top and bottom halves. The top half weighs—with main journal bearings complete and cylinder holding down bolts and studs—133.4 lbs., and the bottom half, which forms the oil base and sump, weighs no less than 73.5 lbs. dry. This makes a total weight of 207 lbs., approxi-

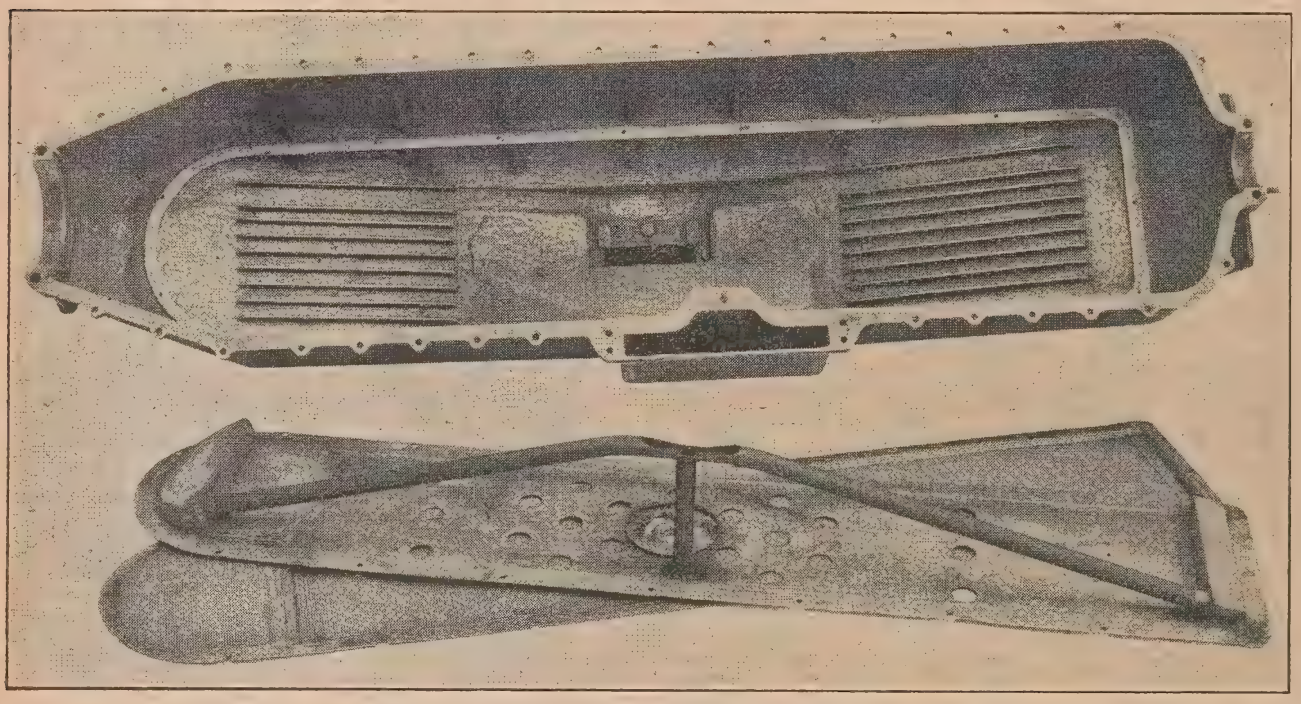


Fig. 16.—Inside View of Base Chamber and Filter Plates.

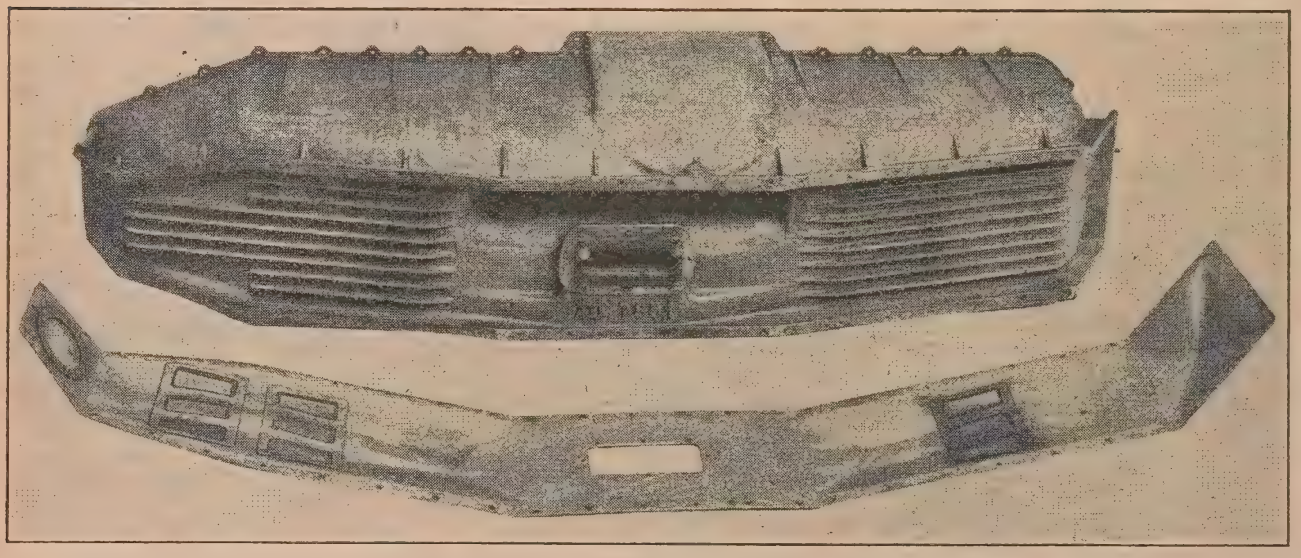
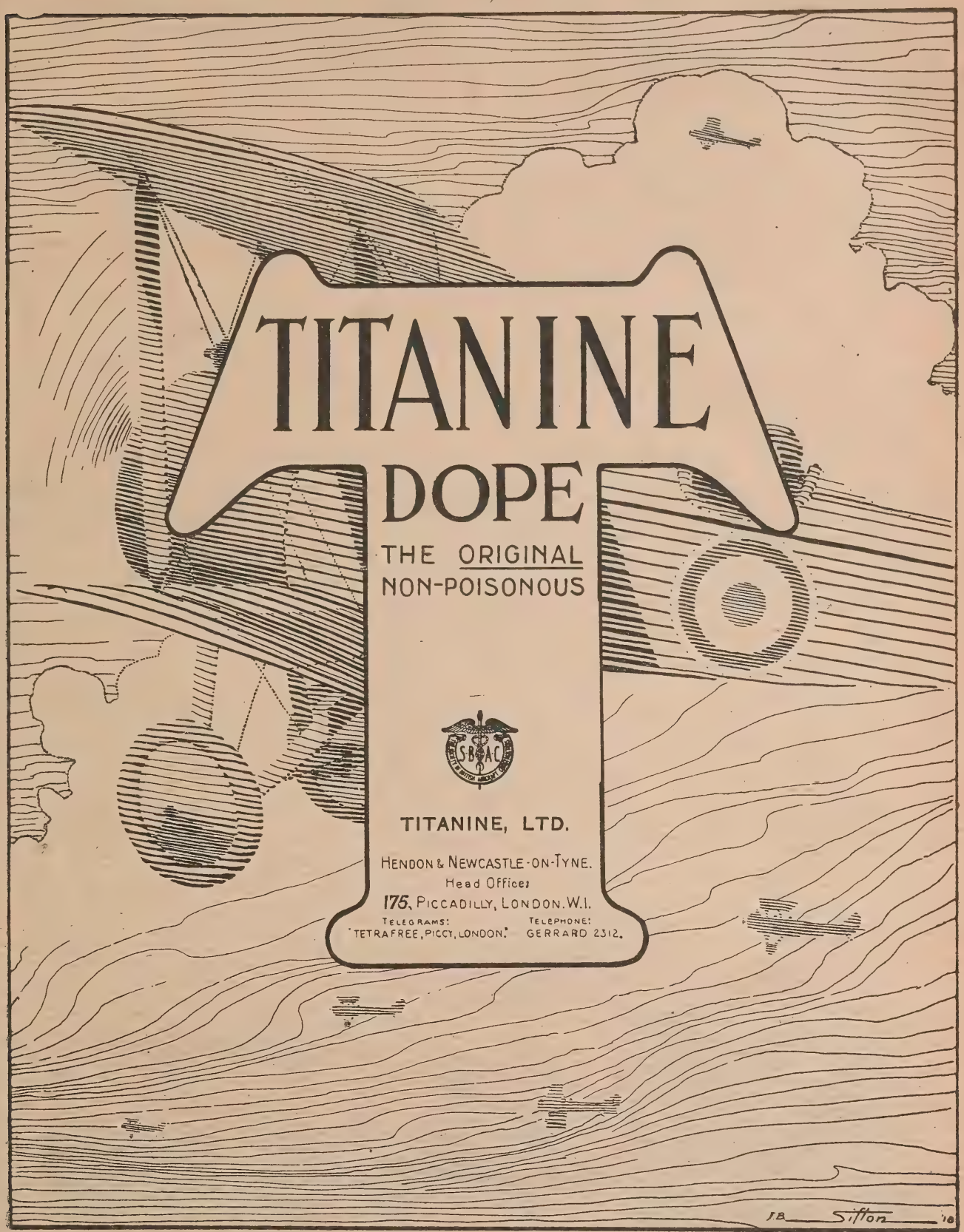


Fig. 17.—View of Base-Chamber from beneath, showing Air Passages and Cover Plate.


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mately, for the complete crank-chamber, which works out at 28 per cent. of the total weight of the engine.

The transverse webs which form the crankshaft journal bearing housings, are of the usual box section, and the eight engine bearer arms cast on the crank-chamber, four on either side, are made as continuations of the transverse webs, and are of the same section; they are exceptionally deep, as shown in the cross sectional view of the engine, Fig. 3.

The front portion of the top half of the crankcase is constructed to form the feed oil tank. This tank, as shown in the section on the general arrangement drawing of the engine, encloses the bottom portion of the camshaft vertical driving shaft, and is fitted with a filling cap and oil filter and also with a glass sight-level oil gauge. The capacity of the feed tank is approximately one gallon.

The efficient ventilation of the crankcase, as in most of the enemy engines, has been well provided for. Two breathers of normal design are fitted on the exhaust side of the crankcase, and a passage is formed in the body of the carburetter, which communicates with the interior of the crank-chamber through a large port cast in the side of the crankcase.

This passage also communicates with the crank-chamber by two large holes cast in the webs of the central bearing housing; the primary function of this passage is, of course, to assist in heating the carburettors, which are also water jacketed.

The average thickness of the walls of the crank-chamber is 9 mm.

Base-Chamber.

The lower half of the crank-chamber is complicated in design, and excessively heavy, weighing 73·5 lbs., complete with false bottoms.

The walls are 6 mm. thick and are strengthened inside and out by ribs spaced 130 mm. apart.

A perforated plate of galvanised sheet steel is screwed onto a flange cast about half-way down the chamber. This plate has shallow oil sumps formed on it at each end and a large hole cut in it in the centre; other holes, 25 mm. in diameter, are pierced in it in various places. Over this bottom is screwed a sheet of finely perforated steel, covered on the underside with very fine wire gauze. Below the filter plate the bottom of the base-chamber slopes sharply to the centre portion which is flat and has a small sump bolted on underneath it. Cooling ribs are cast on the two sloping portions, both inside and out; the sides of the base-chamber are carried down 40 mm. below the bottom and a strip of sheet aluminium is screwed on to their lower edge, thus forming an air chamber along the whole underside of the engine. The aluminium plate has three air ports covered with wire gauze at each end. According to a report these ports are fitted with a vaned shutter.

The main air supply for the carburettor is taken from this false bottom through a passage cast in the side of the crank-chamber. The purpose of the false bottom is to cool the lubricating oil and warm the incoming air.

Oil Pump and Lubrication System.

The lubrication system of this engine is on the wet sump principle, having one large pump to keep the main oil in circulation, and a smaller pump to supply a small charge of fresh oil to the system at each pump stroke.

In this engine the main pump sucks oil from the sump, which is approximately of seven gallons capacity, and delivers it under pressure to the main journal bearings.

The small pump supplies the camshaft with fresh oil taken from the tank cast in the top half of the crankcase. The main oil pump consists of a steel plunger 40 mm. in diameter, working in a cast iron barrel. This plunger is hollow and has another plunger or ram, 7 mm. in diameter, fitted inside it. Both the barrel of the pump and the small plunger remain stationary, whilst the large plunger is rotated by means of a bronze worm

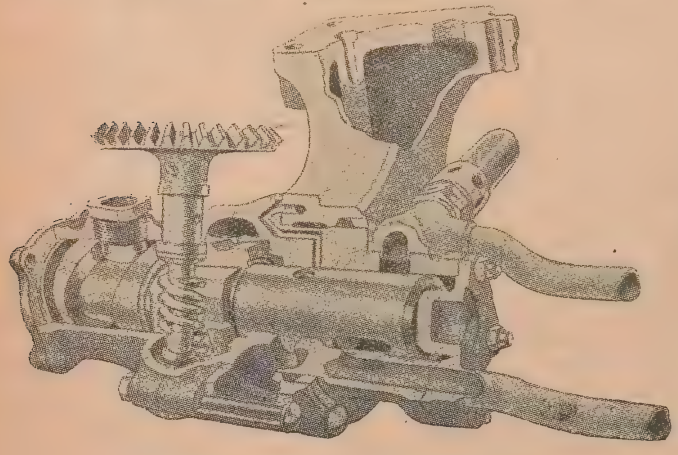


Fig. 18.—Sketch of Oil Pump.

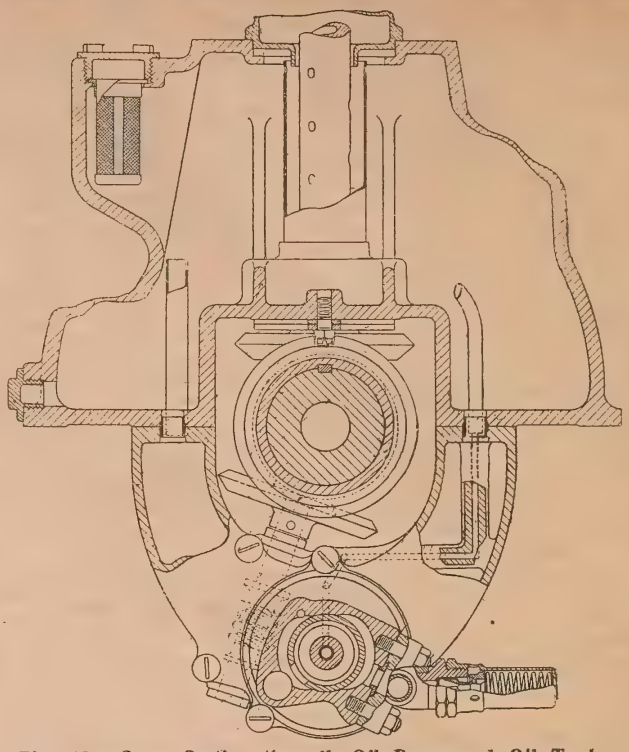


Fig. 19.—Cross Section through Oil Pump and Oil Tank.

wheel, which floats on a square formed on the plunger. The worm wheel is driven from the crankshaft by a worm cut on a small inclined shaft. Besides rotating, the plunger is made to reciprocate by means of a scroll cam machined in the plunger, which works against a hardened steel roller fixed into the pump barrel, and thus transmits the reciprocating motion to the plunger, the end of which is plugged and forms the piston of the main pump.

The small ram fitted inside is also hollow and works on the same principle, though in this case the barrel moves whilst the ram remains stationary. A port cut in the side of this small plunger is put in communication alternately with the supply pipe from the tank and the delivery pipe to the camshaft, by means of an oil way drilled radially in the main plunger. From the main oil pump the oil is forced along a delivery pipe to the centre of the engine, where it feeds the main oil lead running beneath the crankshaft and connected to each of the journals by vertical branch pipes.

The crankshaft is bored and plugged in the usual manner and conveys oil from the journals to the crank-pins, whence the oil is forced up the small pipes attached to the connecting rods into the little-end bearings.

The delivery pipe from the small pump to the camshaft is

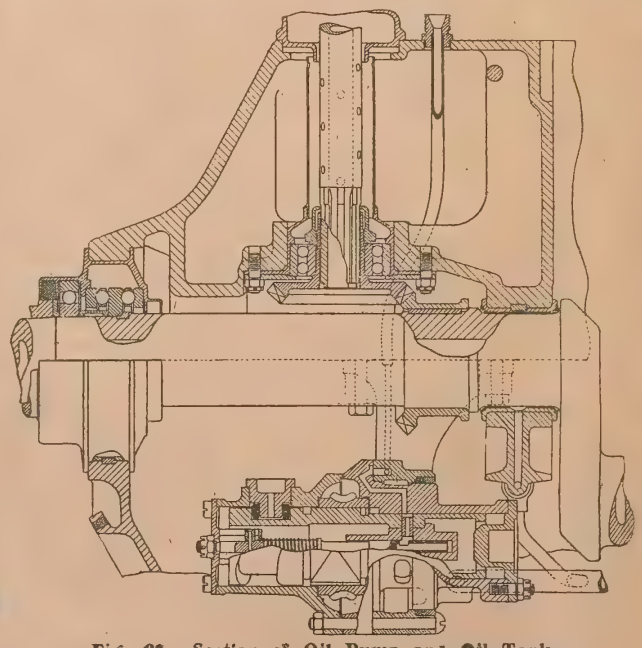


Fig. 20.—Section of Oil Pump and Oil Tank.

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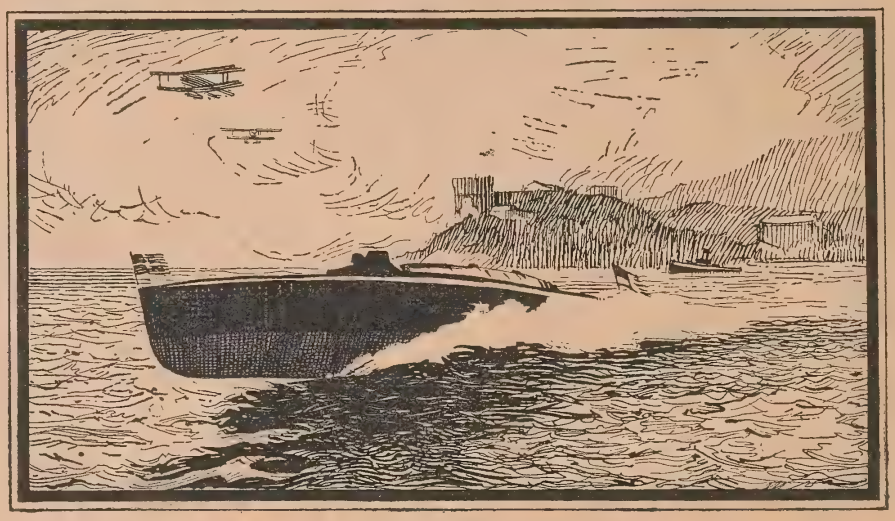
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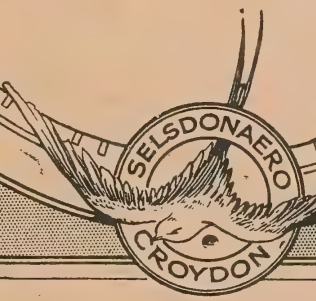
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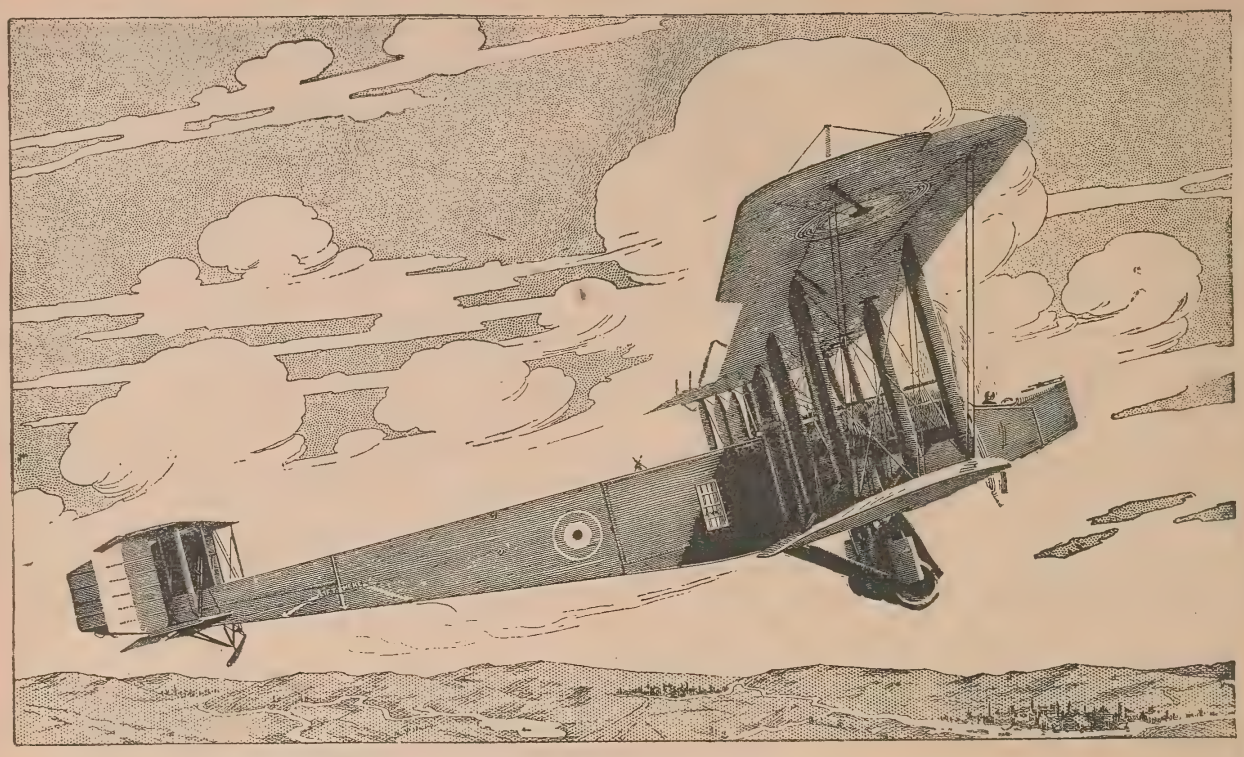
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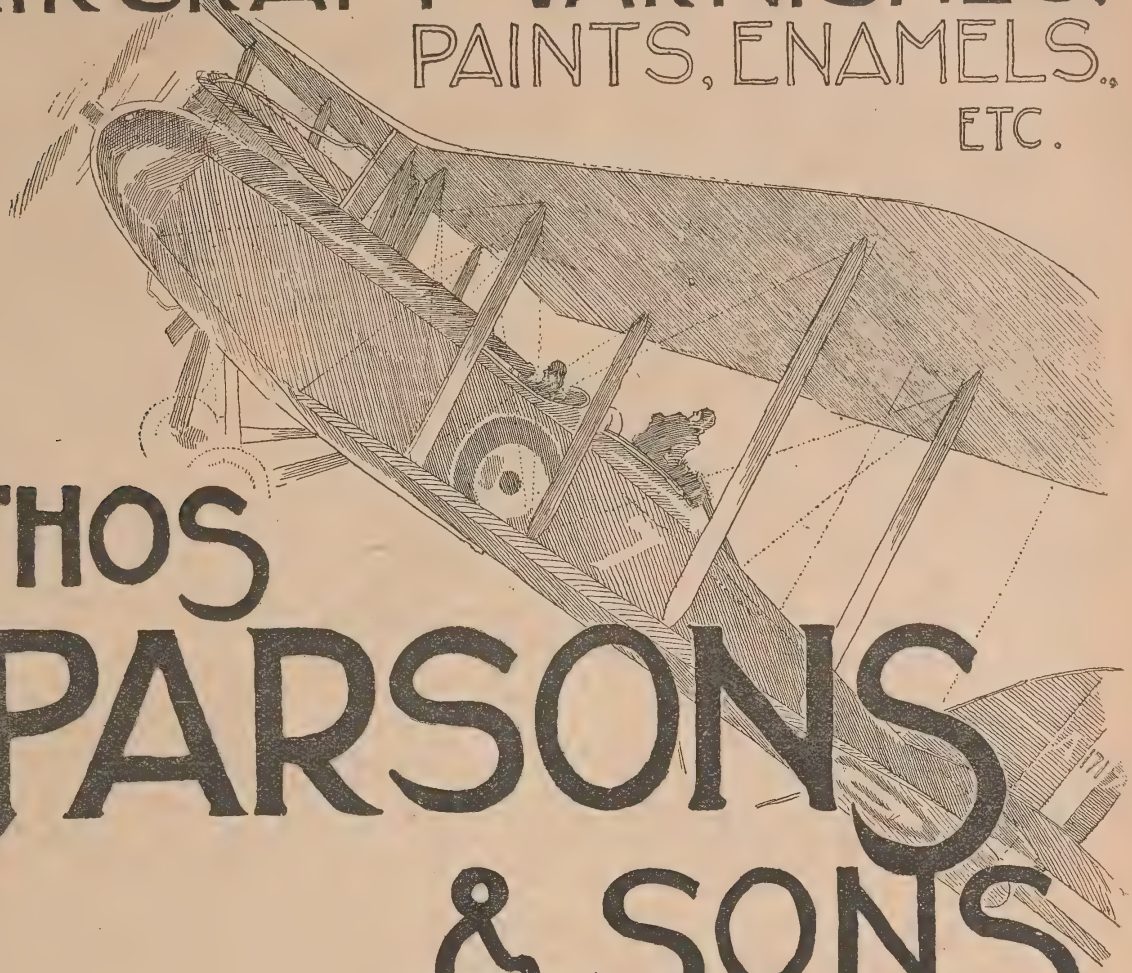
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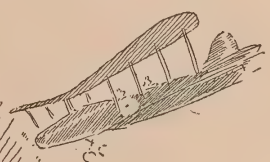
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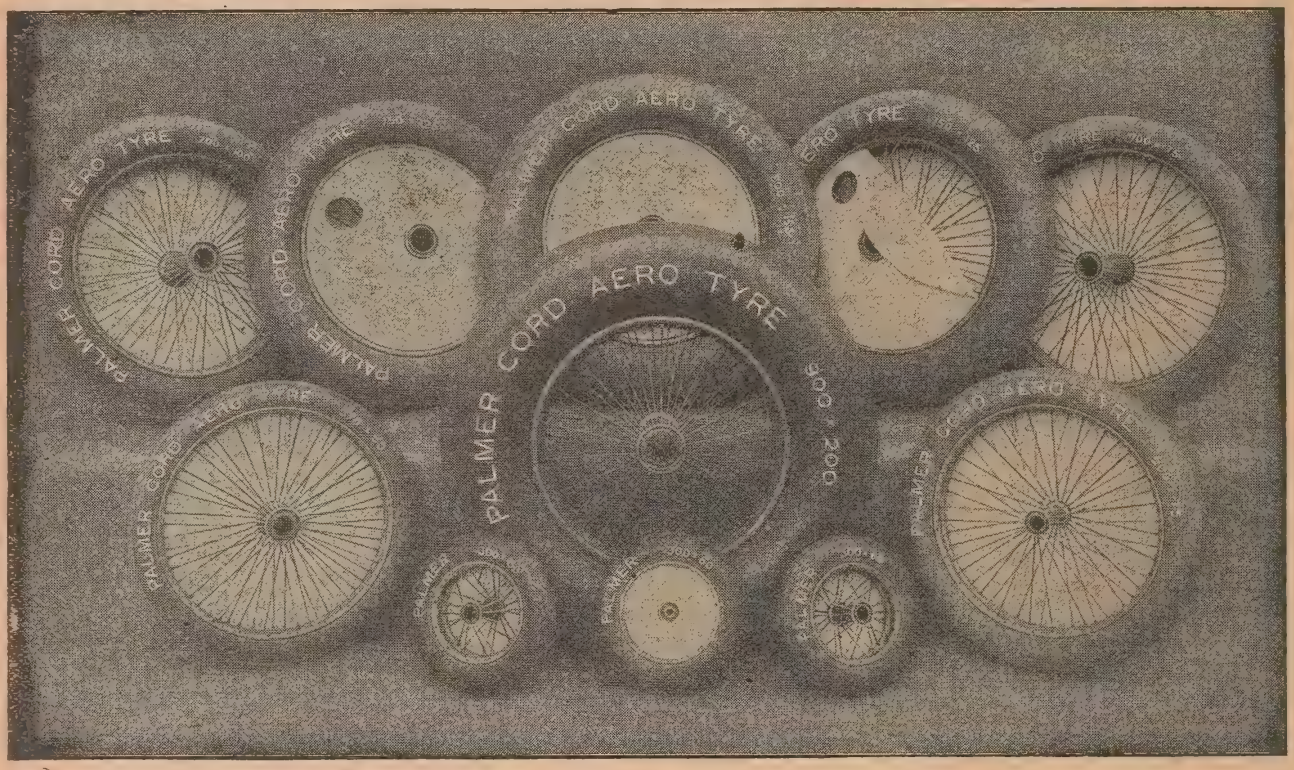
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Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

T. M. Duché & Sons, 6, Eastcheap. "Duché, London." Avenue 2096.

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165

Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Acros, Richmond" Richmond 1681.

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Thompson Bros (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

Titanine, Ltd., 175, Piccadilly. W.1. "Tetrafree, Piccy, London." Gerrard 2312

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Beardmore Aero Eng, Ltd., 112, Great Portland Street, W 1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.

Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6178.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.

Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.

Meudine Co., 8, Arthur Street, E.C. Bank 5873.

Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

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Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London." Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6142.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.

Metal Parts and Fittings (continued)
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 374/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Propellers (continued)—
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 233.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

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"The Aeroplane" Buyers' Guide.—*continued.*

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Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1. Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent" Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95 Avenue. 1432.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

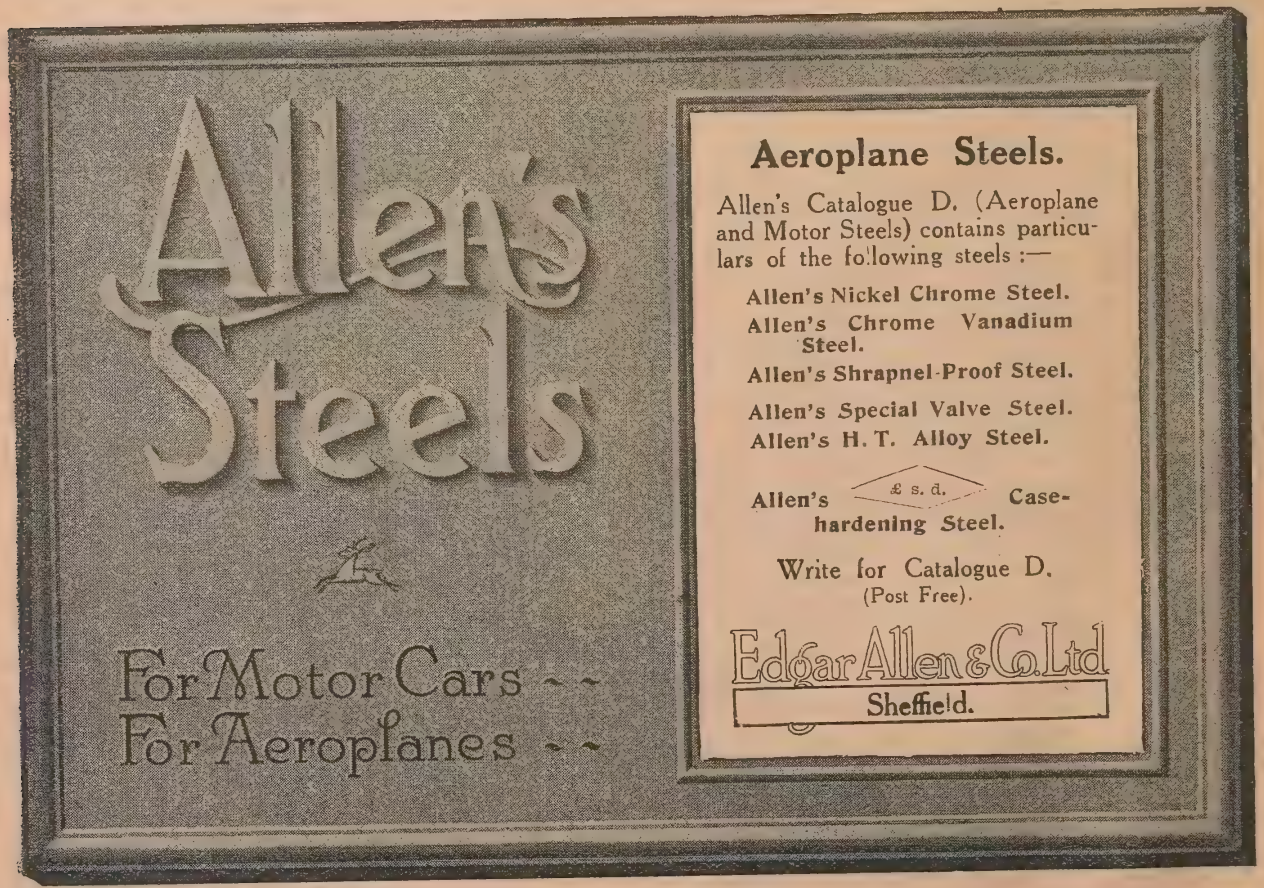
Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—
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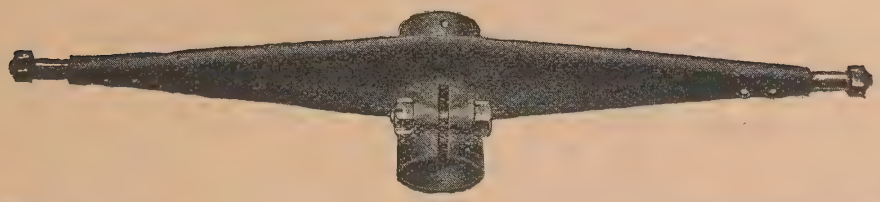
Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 2614



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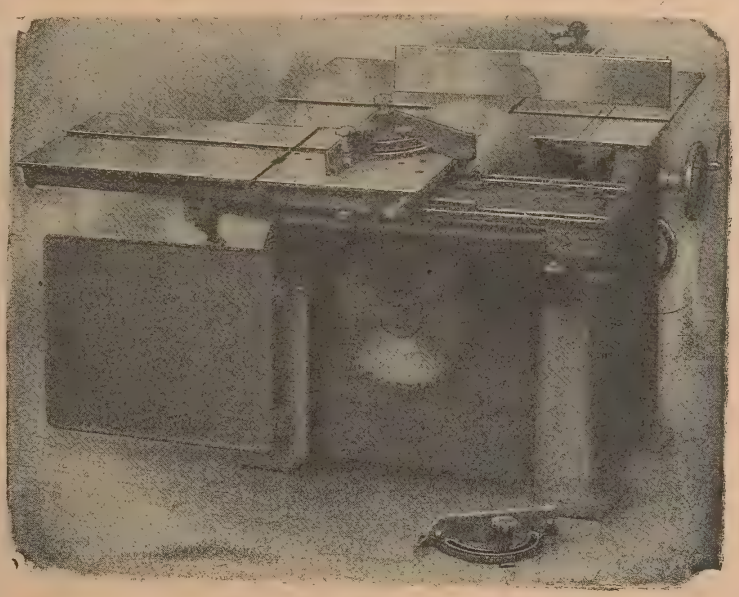
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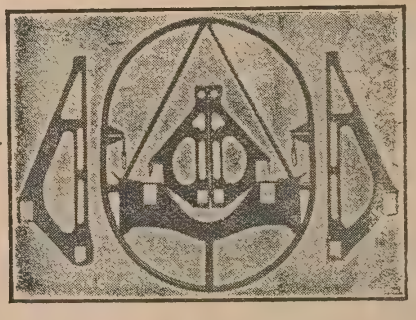
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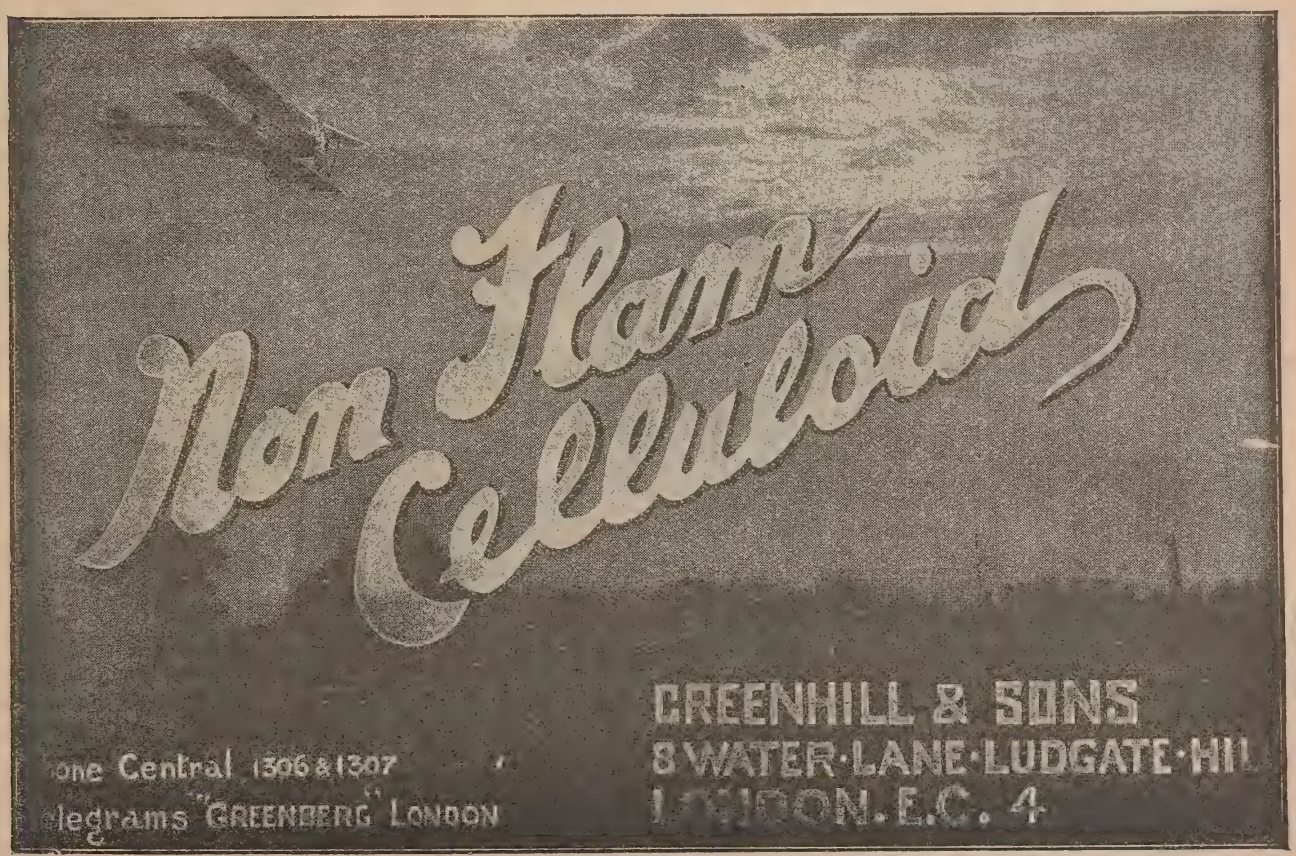
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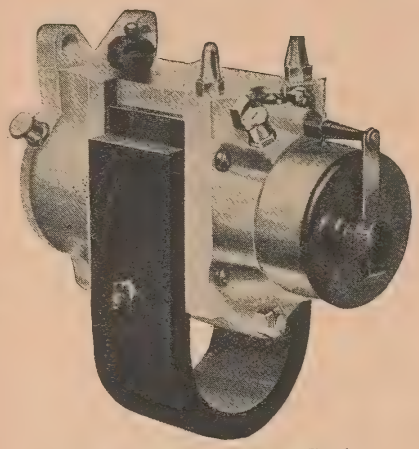
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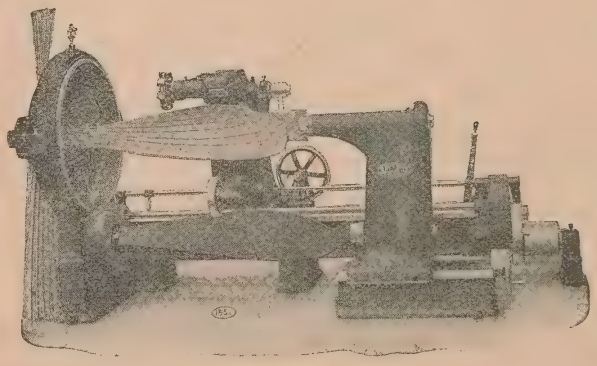
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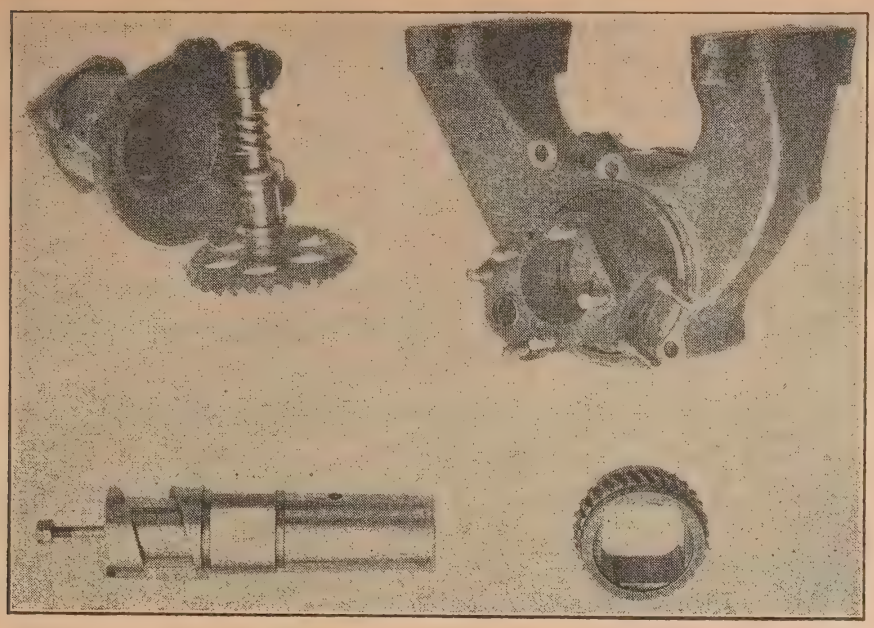


Fig. 21.—Parts of Oil Pump

taken up the front end of the engine and runs along outside the camshaft casing, being connected to the oil ways drilled in the cover plates by six inclined channels formed in the cover plates, as shown in the photograph, Fig. 10.

From this central oil lead in the cover plates the oil is conveyed to the camshaft bearings by the vertical holes drilled in the ends of the cover plates, and to the inner rocker arms by short cross channels, which deliver the oil into grooves milled in the rocker arms, whence it finds its way to the journals of the hollow rocker spindles and their bearings, and also to the cam rollers and cams.

The camshaft casing is always kept half full of oil, and provision is made for filling up before starting by three holes fitted with screwed plugs, which are placed in the top of the cover plates.

From the camshaft casing the oil overflows through two grooves formed in the side of the front camshaft bearing and thence finds its way to the sump down the vertical spindle casing, lubricating the vertical spindle bearings and gears on its way.

The oil sump is exceptionally deep and is fed from the sheet steel false bottom by three pipes, one from each end and one from the centre.

Ignition.

The two Bosch Z.H.6 type-magnetos are driven by bevel gears off the bottom end of the camshaft driving spindle at the front of the engine. The magnetos are mounted on aluminium bed plates which are bolted to the top face of the crank-chamber, which forms an extension over the auxiliary oil tank. As will be noticed in the illustrations of the engine, the magnetos are placed diagonally, each magneto being driven at an angle of 52 degs. to the crankshaft axis, in a horizontal plane.

Two Bosch three-point sparking plugs are fitted to each cylinder on the same side of the engine, being screwed into the combustion heads just below each inlet valve; each magneto, of course, serves one plug in each cylinder. The magneto controls are interlinked with the throttle control, so that when the engine is throttled down the ignition is automatically retarded. The order of firing is as follows:—

Airscrew—1, 5, 3, 6, 2, 4.

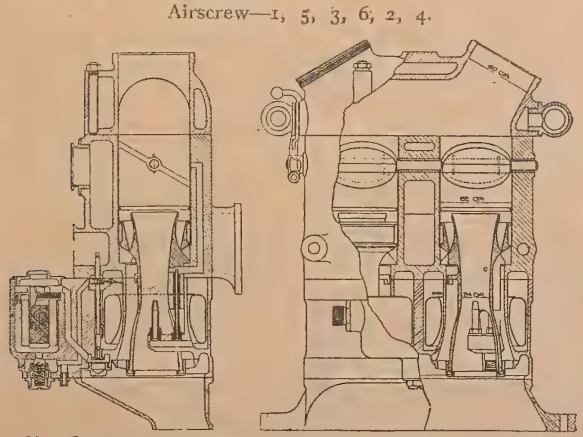


Fig. 22.—Semi-Diagrammatic Sectional Views of Carburetter.

As shown in the photograph of the induction side view of the engine, Fig. 1, all the high tension leads from the magnetos are carried in a particularly neat form of cable carrier, which is made of red sheet fibre and is carried on cast aluminium brackets attached to the top of the crankcase.

Carburetter and Induction System.

The large duplex carburetter is placed on the left side of the engine, and supplies the mixture through two separate galvanised steel induction manifolds; each manifold feeds three cylinders, and is lagged with asbestos. The carburetter is built up in three sections. The bottom section—which is made of gun-metal—contains the two float chambers and the four jets. A common filter chamber fitted with the usual gauze strainer is cast on the front of this portion. The centre portion of the carburetter—which is made of aluminium — contains the butterfly throttles, and the upper portion of the choke tubes.

A large air chamber, cast round the throttle barrels, is used as the outlet for hot air from the crankcase, and thus helps to warm the mixture. The top portion of the carburetter consists of a cast aluminium chamber, in which the supply for the two carburetters is united, thus ensuring an equal supply to each manifold. This chamber has a water jacket cast round it, which is connected to the main water circulation system by a pipe at each end.

The annular float chambers encircle the choke tubes. Two jets are fitted in each carburetter, the capacity of the main jet being 35 cc. per min., and that of the pilot jets 5.8 cc. per min.

The filter is fitted with a pressure release valve which discharges into a small chamber below the filter, where it unites with the overflow from the float chambers.

The air supply to the carburetters is taken from the false bottom, through a passage cast in the side of the crank-chamber; an extra air valve is fitted round the choke tubes.

Petrol Tanks.

In the Austrian "Berg" biplane scouts, fitted with these Austro-Daimler engines, the main petrol tank is under pressure,

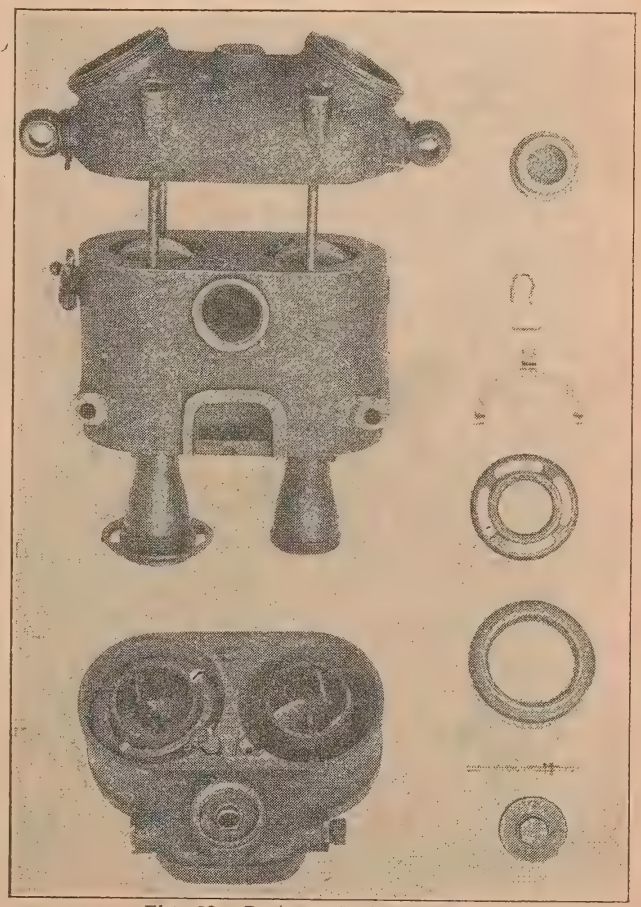


Fig. 23.—Parts of Carburetter.

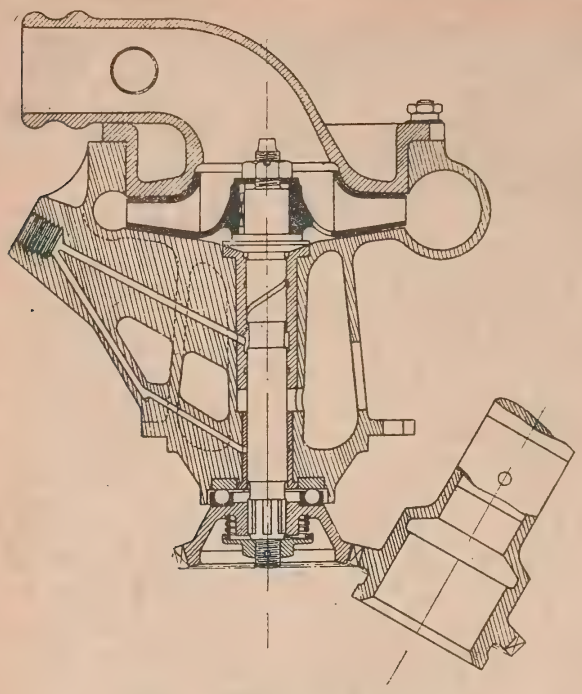


Fig. 24.—Section of Water Pump.

and is situated at the bottom of the fuselage, behind the engine. A small gravity tank holding 3½ gallons is also fitted as an emergency fuel tank, just behind the engine in the upper part of the fuselage, and the total air endurance according to report is given at 2½ hours at 1,000 ft.

Air Pump.

The air pump for the petrol tank pressure is of the spring-loaded plunger type, and is operated by a separate cam on the camshaft between the two rear cylinders. As shown in the sectional arrangement drawing of the compression release gear, it is mounted on the cover of the cast aluminium camshaft casing.

A hand pressure pump is also fitted in the machine.

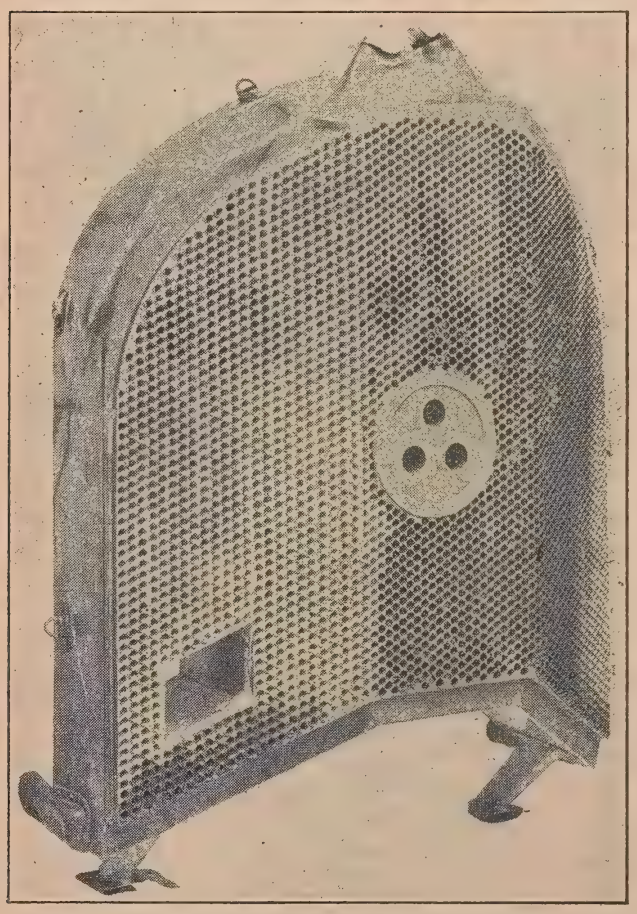


Fig. 25.—Radiator.

Water Pump.

In Fig. 24 is given a sectional view of the complete water pump. This is of the centrifugal type, and as shown in the views of the engine is driven directly off the rear end of the crankshaft by a bevel gear which is integral with a sleeve forming an extension shaft. This is attached to the rear end of the crankshaft, and also drives the gun interrupter gear through a worm gear on a transverse shaft.

The water pump spindle is inclined at an angle of 30 degs. to the crankshaft and runs in phosphor bronze bearings. The driving bevel gear floats on the end of the pump spindle, and is fitted with a large diameter thrust ball race and retaining spring, which, being at the bottom end of the spindle, are as far away as possible from the rotor of the water pump. Both the pump spindle bearings are well lubricated, through two drilled holes in the pump body and oil grooves cut in the spindle bearings, by a large self-acting grease lubricator which is screwed into the cast aluminium water-pump body. The pump rotor is 112 mm. diameter and is formed with six vanes of the usual Mercédès type. The rotor is keyed to the spindle and secured by a gun-metal nut and washer.

A conically faced shoulder is machined on the pump spindle directly beneath the rotor. The shoulder beds into the bevelled face of the bronze bearing, forming an efficient water joint. The water pump, although somewhat heavy in its construction, is well designed and is very accessible. The diameter of the intake passage through the cover is 36 mm., and the diameter of the delivery is also 36 mm.

Water-cooling System.

A "V" type honeycomb radiator is used with this engine, and is mounted at the front of the engine, directly behind the airscrew. (See Fig. 25.)

The capacity of the radiator is approximately four gallons, and a small barrel-shaped condenser, 4 ins. diameter and 5 ins. long, is provided on the top of the radiator, apparently to prevent boiling water from escaping and blowing back. No louvres or blind are fitted to prevent over-cooling.

From the bottom of the radiator water is circulated through the steel pipe to the inlet of the water pump and is delivered into the bottom of each of the cylinder water jackets. These are coupled together in the usual way by rubber joint rings and clips, both at the bottom of the water jackets, and in the water passages above the valves in the cylinder heads. The construction of these joint rings is interesting, consisting of bevelled rubber rings, reinforced in the centre with a steel spring ring. The rubber joint rings are expanded into the outside of the conical faces of the steel water connections on the cylinders by the halves of a split aluminium ring, which are clamped together by a band clip of ordinary design. From the results and appearance of the engine during tests these water joints are very efficient. Circulating through the cylinder water jackets, the water passes to the top of the radiator through two passages cast in the front end of the aluminium camshaft casing. These water passages encircle the camshaft just behind the driving bevel gears.

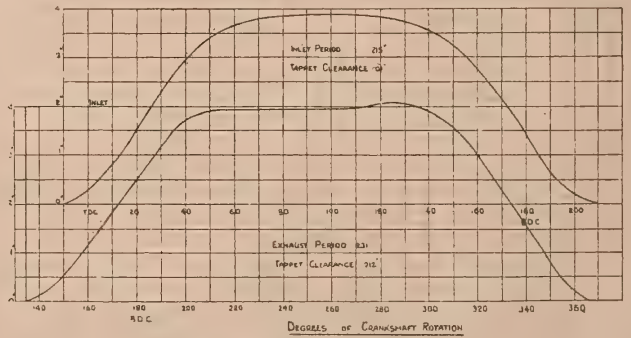


Fig. 26.—Valve Lift Diagram.

Revolution Indicators.

A flexible drive for the engine speed indicator is driven directly off the rear end of the camshaft in a small extension chamber, and some form of revolution indicator was apparently mounted in the centre of the "V" radiator. Unfortunately the instrument is missing, but a portion of the driving mechanism is shown in the general arrangement, Fig. 29, at the end of the report, from which it will be seen that the gear employs a small diameter worm mounted about half-way up the vertical driving shaft. This engages with a worm pinion which drives a trip-gear pinion at a speed ratio of approximately 1 : 100.

Wireless Generator.

A flange is machined on the rear extension of the crankshaft to take a belt driving pulley for the wireless dynamo. This pulley is probably of the standard friction clutch type used on all enemy engines.



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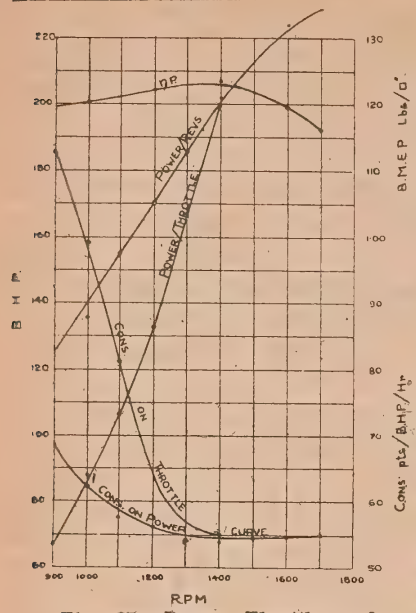


Fig. 27.—Power, Throttle, and Consumption Curves.

EXHAUST.

No exhaust manifold or silencer is provided, but a separate short exhaust pipe about 12 ins. long of streamline section extends from each cylinder. These are shown in the photograph of the engine, Fig. 2.

CONCLUSIONS.

The design of this new type Austro-Daimler engine, as set out in the foregoing detailed description, and the following data and test results, shows a careful study of details.

Both in its general lay-out and in most of its details of construction this engine undoubtedly possesses more originality in design than the majority of enemy engines up to the present time.

The design of the lubrication and oil-cooling system has evidently been carefully considered, as have also the carburetter and induction systems.

The new type of scroll cam oil pump is interesting, but in its present form is excessively heavy. This type of oil pump, however, it is interesting to note, is now used on the new 270 h.p.

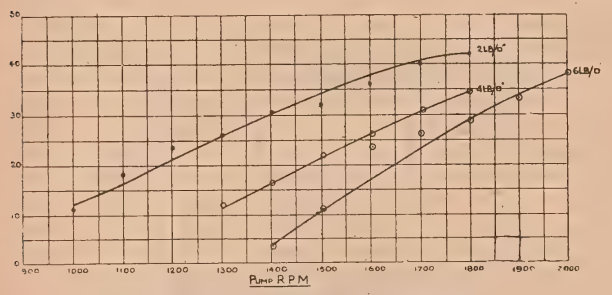


Fig. 28.—Water Pump Delivery Curves.

Bassé-Selve engines. In these engines the oil pump works on exactly the same principle, but is duplex and is relatively much lighter, the body of the pump being made of cast aluminium instead of cast iron.

The 200 h.p. Austro-Daimler engine would be very suitable for installation in any of the small enemy scout machines which use the 180 h.p. Mercédès engines, but, speaking generally, the new Austro-Daimler engines need hardly be considered as a serious effort to compete with any of the Allied aero engines of the same rating and proportions.

This engine is at the Enemy Aircraft View Rooms, Islington

F. G. C., Lieut., R.A.F.,
Ap.D. (L.).

J. G. WEIR, Brig.-Gen.,
Controller, Technical Dept.

R.A.E. CALIBRATION AND ENDURANCE TEST REPORT.

The 200 h.p. Austro-Daimler engine was coupled to a Heenan and Froude dynamometer, and run for the usual calibration and one-hour endurance tests. Power, throttle, and consumption curves are given in Fig. 27.

CALIBRATION RESULTS.

R.P.M.	1300	1400	1500	1600
B.H.P.	186	200	212	222
Brake M.E.P.	123.5	123.3	122	119.7
Petrol consump. in pts./B.H.P./hour	.55	.545	.546	.548

ENDURANCE TEST.

The engine was submitted to an endurance test of one hour's duration at normal revs., i.e., 1,400 r.p.m., with the following results :—

Average output	202 B.H.P.
Average speed	1,400 r.p.m.
Petrol consumption per hour	14 gallons
Petrol consumption B.H.P. hour	0.555 pints/b.h.p./hour
Oil consumption per hour	7 pints
Oil pressure	5 lbs./sq./inch
Oil temperature	50° C.
Water temperature (inlet)	54.5° C.
Water temperature (outlet)	60° C.
Total duration of tests	10 hours 25 mins.
Complete weight of engine	728.5 lbs. dry.

WEIGHT PER B.H.P.

At 1300 r.p.m. = 3.81 lbs. per B.H.P.
1400 ,, = 3.64 ,, ,, ,,
1500 ,, = 3.43 ,, ,, ,,
1600 ,, = 3.28 ,, ,, ,,

RUNNING DURING ONE HOUR ENDURANCE TEST.

Very steady between 700 and 1,700 r.p.m.

At 500 r.p.m. vibration was bad, and below this speed running was generally unsteady.

DISTRIBUTION.

Very good.

CLEANLINESS.

Throughout the test the engine kept remarkably clean. No trace of oil or water leakage was observed.

TROUBLES EXPERIENCED ON TEST.

The K.L.G. spark plugs fitted for the test gave trouble by shorting internally.

The valve tappets required to be re-adjusted during the test.

TEST OF WATER PUMP.

Speed of the water pump spindle = 1.894 : 1 crankshaft revolution.

The delivery of the water pump under varying pressures has been made the subject of a separate test, the results of which are given in the following test report and delivery curves, Fig. 28.

The pump was coupled to an electric motor and run with the following results :—

R.P.M.	Pressure.	Delivery.
1800	2 lbs. sq. in.	42 galls. per min.
1800	4 ,, ,, ,,	35 ,, ,, ,,
1800	6 ,, ,, ,,	28.5 ,, ,, ,,

The weight of the complete water pump = 7.6 lbs.

R.A.E. METALLURGICAL TEST REPORT.

The chemical compositions and the relative material strengths of the principal parts of the engine are given in the following chemical analysis and mechanical test reports :—

(1) CHEMICAL ANALYSIS.

Per Cent.:	C.	Si.	Mn.	S.	P.	Cr.	Ni.
Crankshaft	.14	.27	.43	.030	.006	1.34	3.45
Cylinder	.47	.19	.67	.037	.046	Nil.	Nil.
Connecting Rod	.40	.16	.73	.043	.023	.36	1.50
Camshaft (case-hardened)	.—	.21	.43	.035	.012	.57	3.15
Inlet Valve	.46	.24	.42	.023	.022	.47	2.28
Exhaust Valve	.44	.24	.41	.025	.022	.47	2.36
Valve Rocker	.46	.09	.63	.051	.028	.42	1.57
Gudgeon Pin (case-hardened)	—	.12	.49	.028	.011	1.5	3.70

(2) CHEMICAL ANALYSIS.

	Crankcase Per Cent.	Piston. Per Cent.
Copper	2.79	7.67
Zinc	6.61	1.33
Tin	Nil.	2.21
Silicon	0.76	0.52
Iron	2.06	1.32
Manganese	0.02	Trace
Nickel	—	Nil.
Magnesium	—	0.29
Aluminium (by difference)	87.76	86.66

(3) BEARINGS.

Per Cent.:	Journal Bearings.	Big-End Bearings.	Camshaft Bearings.	Valve Rocker Bearings.
Copper	6.70	5.10	87.51	96.29
Zinc	—	—	0.28	Trace
Tin	81.13	81.42	11.34 —	2.52
Lead	0.71	1.64	0.17	0.28
Antimony	12.00	12.00	—	—
Manganese	—	—	Nil	0.21
Nickel	—	—	0.35	0.07
Iron	—	—	0.17	0.13
Phosphorus	—	—	0.05	—



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(4) Mechanical Tests.

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Journal ..... A. 1.	.002	66.7	75.1	13.33	57.4	
,, ... B. 2.						30.5
Pin ..... C. 3.	.005	62.7	72.5	15.55	59.8	
,, ... D. 4.						33.5
Web Longitude ..... E. 5.	.005	71.6	75.8	10.0	35.0	
,, ... F. 6.						7.5
,, Transverse .... G. 7.	.005	72.9	74.5	7.78	25.1	
,, ,, ... H. 8.						(1) 5.0
						(2) 7.0

GENERAL DATA.

Make of engine and rated h.p.	Austro-Daimler 200 h.p.
No. of cylinders	Six
Type number	8,597
Bore	135.0 mm. (5.31 ins.)
Stroke	175.0 mm. (6.89 ins.)
Stroke/bore ratio	1.29 :1
Area of one piston	143.1 sq. cm. (22.2 sq. ins.)
Total piston area of engine	858.6 sq. cm. (133.1 sq ins.)
Swept volume of one cylinder	2504.9 cu. cm (152.8 cu. ins.)
Total swept volume of engine	15029.7 cu. cm. (916.8 cu. ins.)
Clearance volume of one cylinder	623.1 cu. cm. (38.0 cu. ins.)
Compression ratio	5.02 : 1
Normal b.h.p. and speed	200 b.h.p. at 1400 r.p.m.
Maximum ditto	222 b.h.p. at 1600 r.p.m.
Normal b.m.e.p.	123.3 lbs. per sq. in. at 1400 r.p.m.
Maximum ditto	123.5 lbs. per sq. in at 1300 r.p.m.
Piston speed	1607 ft. per min.
Mechanical efficiency (calculated)	89.7 per cent.
Indicated mean pressure (calculated)	137.5 lbs. sq. in.
Fuel consumption per b.h.p. hour	0.555 pint = 0.499 lb.
Brake thermal efficiency	27.4 per cent.
Indicated thermal efficiency	30.6 per cent.
Air standard efficiency	47.5 per cent.
Relative efficiency	64.4 per cent.
Cub. in. of swept volume per b.h.p.	4.58 cu. ins.
Sq. in. of piston area per b.h.p.	0.665 sq. in.
H.p. per cub. ft. of stroke volume	377.3 b.h.p.
H.p. per sq. ft. of piston area	216.6 b.h.p.
Direction of rotation of crankshaft	Anti-clockwise
Direction of rotation of airscrew	Ditto
Type of gear reduction to airscrew	None
Ratio crankshaft speed/airscrew speed	1 :1
Type of valve gear	Overhead camshaft
Type of starting gear	Compression release

Carburetters.

Number and type of carburetters	One dual Austro-Daimler
Diameter of choke tube	24.0 mm. (0.945 in.)
Bore of main jets	35.0 c.c. through per min.
Bore of pilot jets	5.8 c.c. through per min.
Fuel consumption per hour	111.0 pints = 100.0 lbs.
Fuel consumption per b.h.p. hour	0.555 pint = 0.499 lb.

Gas Velocities, Valve Area, Etc.

Diameters.

Induction pipe	59.0 mm. (2.32 ins.)
Inlet and exhaust effective valve ports (each)	44.0 mm. (1.73 ins.)
Inlet and exhaust cylinder ports (each)	42.0 mm. (1.65 in.)

Cross Sectional Areas.

Induction pipe	27.33 sq. cm. (4.22 sq. ins.)
Inlet valve (π dh) each	13.69 sq. cm. (2.12 sq. ins.)
Exhaust valve (π dh) each	14.05 sq. cm. (2.18 sq. ins.)
Exhaust branch pipes	38.25 sq. cm. (5.92 sq. ins.)

Mean Gas Velocities (1,400 r.p.m.)

Induction pipe	141.0 ft. per sec.
Inlet valves	140.0 ft. per sec.
Exhaust valves	136.0 ft. per sec.
Exhaust branch pipe	100.5 ft. per sec.

Inlet Valves.

Number per cylinder	Two
Largest diameter	48.0 mm. (1.89 in.)
Effective valve port diameter	44.0 mm. (1.73 in.)
Width of seating	2.5 mm. (0.09 in.)
Angle of seating	45 degs.
Lift of valve	9.9 mm. (0.39 in.)
Diameter of stem	10.0 mm. (0.39 in.)
Length of valve guide	68.0 mm. (2.67 ins.)
Overall length of valve	135.0 mm. (5.315 ins.)
Number of springs per valve	One
Free length of spring	60.0 mm. (2.36 ins.)
Length of spring in position (no lift)	46.0 mm. (1.81 in.)
Mean diameter of coils	34.0 mm. (1.34 in.)
Diameter of wire	4.0 mm. (0.157 in.)
Ratio length of spring/lift of valve	4.61 :1
Weight of valve complete with spring	0.50 lb.
Weight of spring bare	0.16 lb.
Inlet valve opens	10 degs. early
Inlet valve closes	30 degs. late
Period of induction	220 degs.
Inlet valve tappet clearance	0.25 mm. (0.01 in.)

Exhaust Valves.

Number per cylinder	Two
Largest diameter	48.0 mm. (1.89 ins.)
Effective valve port diameter	44.0 mm. = 1.73 in.
Width of seating	2.5 mm. (0.09 in.)
Angle of seating	45 degs.
Lift of valve	10.16 mm. (0.40 in.)
Diameter of stem	10.0 mm. (0.39 in.)
Length of valve guide	68.0 mm. (2.67 ins.)
Overall length of valve	135.0 mm. (5.315 ins.)
Number of springs per valve	One
Free length of spring	60.0 mm (2.36 ins.)
Length of spring in position (no lift)	46.00 mm. (1.81 in.)
Mean diameter of coils	34.0 mm. (1.34 in.)
Diameter of wire	4.0 mm. (0.157 in.)
Ratio length of spring/lift of valve	4.6 :1.
Weight of valve complete with spring	0.5 lb.
Weight of spring bare	0.16 lb.
Exhaust valve opens	45 deg. early.
Exhaust valve closes	7 deg. late.
Period of exhaust	232 degs
Exhaust valve tappet clearance	0.304 mm. (0.012 in.)

Inertia Forces, Bearing Loads, Etc.

Weight of piston complete with rings and gudgeon pin	4.18 lbs.
Weight per sq. in. of piston area	0.188 lb.
Weight of connecting-rod complete	4.84 lbs.
Weight of reciprocating part of connecting-rod	1.66 lb.
Total reciprocating weight per cyl.	5.84 lbs.
Weight per sq. in. of piston area	0.263 lb.
Length of con. rod. (centres)	315.0 mm. (12.40 ins.)
Ratio con. rod/crank throw	3.6 :1.
Inertia lbs./sq. in piston area top centre	63.8 lbs./sq ins.
Inertia lbs./sq. in. piston area bottom centre	36.2 lbs./sq ins
Inertia lbs./sq. in. piston area mean	25.0 lbs./sq. ins.
Weight of rotating mass of con. rod	3.18 lbs.
Total centrifugal pressure	610 lbs.
Centrifugal pressure lbs./sq. in. piston area	27.5 lbs./sq. ins.
Mean average fluid pressure including compression	47.0 lbs./sq. ins.
Mean average loading on crank pin bearing, total from all sources in terms of lbs./sq. in. piston area	91.0 lbs./sq. ins.
Diameter of crank pin	56.0 mm (2.20 ins.)
Rubbing velocity	13.42 ft. per sec.
Effective projected area of big-end bearing	32.4 sq. cm. (5.02 sq. ins.)
Ratio piston area/projected area of big-end bearing	4.42 :1.
Mean average loading on big-end bearing	402 lbs./sq. ins.
Load factor on big-end bearing	5400 lbs./ft. sec.

Cylinders.

Overall height of bare cylinder from top of base chamber	365.0 mm. (14.370 ins.)
Depth of spigot at base of cylinder	15.0 mm. (0.590 in.)
Diameter of cylinder over water jacket	160.0 mm. (6.29 ins.)
Thickness of flange at base of cylinder	11.0 mm. (0.433 in.)
Number of holding-down bolts per cylinder	Eight.
Diameter of holding-down studs	4 of 14.0 mm. 4 of 19.0 mm.
Thickness of water jacket	1.00 mm. (0.039 in.)
Mean thickness of combustion chamber wall	5.0 mm. (0.197 in.)
Thickness of cylinder barrel (top)	4.0 mm. (0.177 in.)
Thickness of cylinder barrel (centre)	3.0 mm. (0.138 in.)
Thickness of cylinder barrel (bottom)	4.0 mm. (0.157 in.)
Diameter of water connections between cylinders	36.0 mm. (1.42 in.)

Piston.

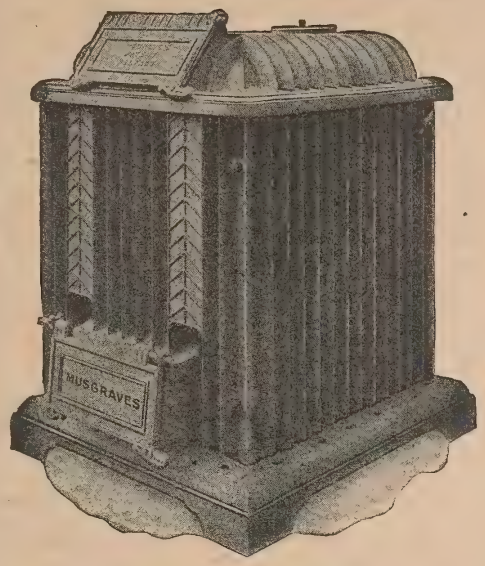
Type of piston	Aluminium; internal ribs.
Diameter at top	134.0 mm. (5.275 ins.)
Diameter at bottom	134.58 mm (5.297 ins.)
Length	110.5 mm. (4.35 ins.)
Ratio, piston length cylinder bore	0.82 :1.

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C.D.C.

Number of rings per cylinder	Three.
Position of rings	Above gudgeon pin.
Width of rings	7.0 mm. (0.275 in.)
Gap of rings in cylinder	0.48 mm (0.019 in.)

CONNECTING-ROD.

Length between centres	315.0 mm. (12.40 ins.)
Ratio connecting rod/crank throw	3.6 :1.
Little-end bearing, type	Plain phosphor bronze.
,, ,, ,, diameter	28.0 mm. (1.10 in.)
,, ,, ,, length	67.0 mm. (2.64 ins.)
,, ,, ,, projected area	18.70 sq. cm. (2.90 sq. ins.)
Ratio piston area/projected area little-end bearing	7.66 :1.
Big-end bearing, type	Bronze shell, lined white metal.
,, ,, ,, diameter	56.0 mm. (2.20 ins.)
,, ,, ,, length (actual)	67.0 mm. (2.63 ins.)
,, ,, ,, length (effective)	58.0 mm. (2.28 ins.)
,, ,, ,, projected area	28.4 sq. cm. (5.02 sq. ins.)
Ratio piston area/projected area big-end bearing	4.42 :1.
Number of big-end bolts	Four.
Full diameter of bolts	10.0 mm. (0.39 in.)
Total cross sectional area bottom of threads	2.04 sq. cm. (0.316 sq. in.)
Pitch of threads	1.5 metric
Maximum load due to inertia at 1400 r.p.m.	1390 lbs
Maximum load due to inertia at 1600 r.p.m.	1815 lbs.
Load due to centrifugal force at 1400 r.p.m.	370 lbs.
Load due to centrifugal force at 1600 r.p.m.	485 lbs.
Total load on bolts at 1400 r.p.m.	1760 lbs.
Total load on bolts at 1600 r.p.m.	2300 lbs
Stress per sq. in. at 1400 r.p.m.	5570 lbs./sq. ins.
Stress per sq. in. at 1600 r.p.m.	7280 lbs./sq. ins.

CRANKSHAFT.

Number and type of main bearings	Seven, bronze cage, lined white metal
Cylinder centres	166.0 mm. (6.53 ins.)
Crankpins.	
Outside diameter	56.0 mm. (2.20 ins.)
Inside diameter	30.0 mm. (1.18 in.)
Length	68.0 mm. (2.67 ins.)
Journals.	
Outside diameter	58.0 mm. (2.28 ins.)
Inside diameter (front two)	21.0 mm. (0.82 in.)
,, ,, (others)	30 mm. (1.18 in.)
Length airscrew end	56.0 mm. (2.20 ins.)
,, rear end	43.5 mm. (1.71 in.)
,, centre	50.0 mm. (1.97 in.)
,, intermediate	50.0 mm. (1.97 in.)
Crank Webs.	
Width	74.0 mm. (2.91 ins.)
Thickness (front two)	24.5 mm. (0.96 in.)
,, (others)	24.0 mm. (0.94 in.)
Radius at ends of journals and crank pins	4.5 mm. (0.17 in.)
Weight of complete shaft	96.5 lbs.

WORKING CLEARANCES.

Piston clearance top (total)	1.00 mm. (0.039 in.)
Piston clearance bottom (total)	0.42 mm. (0.016 in.)
Side clearance of con. rod in piston (total)	2.50 mm. (0.098 in.)
Side clearance of con. rod on crank-pin (total)	1.00 mm. (0.039 in.)
End clearance of crankshaft in main bearings	2.00 mm. (0.079 in.)

LUBRICATION SYSTEM.

Number and type of oil pumps	One plunger
Oil consumption per hour	7.0 pints
Oil consumption per b.h.p. hour	0.035 pt. = 0.039 lb.
Oil pressure	50 degs. C
Oil temperature	5 lbs. per sq. in
Specific gravity of oil	0.899
Ratio pump speed/crankshaft speed	1 : 15

IGNITION.

Number and type of magnetos	Two Bosch Z.H.6
Firing sequence of engine	Airscrew 1-5-3-6-2-4
Ignition timing (fully advanced)	20 degs. E to 40 degs. E, variable
Number of plugs per cylinder	Two
Type of plugs	Bosch 3 point
Ratio magneto speed/crankshaft speed	1.5 : 1

COOLING SYSTEM

Number and type of water pumps	One centrifugal
Diameter of inlet pipe	36.0 mm. (1.42 in.)
Diameter of outlet pipe	36.0 mm. (1.42 in.)
Diameter of rotor	112.0 mm. (4.40 in.)
Number and type of radiators	One Honeycomb
Ratio water pump speed/engine speed	1.894 : 1
Water temperature inlet	54.5 degs. C.
Water temperature outlet	60.0 degs. C.

AIR PUMP.

Type of air pump	Cam operated plunger
Bore	38.0 mm. (1.496 in.)

WEIGHTS.

Weight of complete engine, dry, with airscrew boss and exhaust manifold	728.5 lbs.
Weight per b.h.p. ditto	3.64 lbs.
Weight of fuel per hour	100.00 lbs.
Weight of oil per hour	7.86 lbs.
Total weight of fuel and oil per hour	107.86 lbs.
Gross weight of engine in running order, less fuel and oil (cooling system at 0.65 lb. per b.h.p.	858.50 lbs.
Weight per b.h.p. ditto	4.29 lbs.
Gross weight of engine in running order, with fuel and oil for six hours' running (tankage at 10 per cent. weight of fuel and oil)	1570.4 lbs.
Weight per b.h.p.	7.85 lbs.

OVERALL DIMENSIONS.

Height	1150 mm.
Length	1724 mm.
Width	568 mm.

GENERAL ANALYSIS OF WEIGHTS.

Description of Part.	No. per Set.	Average Unit weight in lbs.	Weight of complete Set in lbs.	Percentage of total weight
Cylinders, bare	6	18.43	110.62	15.30
Detachable Inlet valve pockets	6	1.06	6.37	0.87
Pistons, complete with rings	6	3.52	21.12	2.90
Gudgeon pins	6	0.66	4.00	0.54
Connecting rods	6	4.84	29.04	3.98
Crankshaft	1	96.50	96.50	13.24
Inlet valves	12	0.34	4.12	0.56
Exhaust valves	12	0.34	4.12	0.56
Inlet exhaust valve springs	24	0.16	3.88	5.53
Valve collars and locking cones	24	0.09	2.19	0.30
Valve rockers (with bearings)	12	1.25	15.00	2.06
Camshaft	1	10.25	10.25	1.40
Camshaft casing complete	1	34.50	34.50	4.74
Half compression gear	1	2.69	2.69	0.36
Vertical camshaft driving spindle (complete)	1	6.81	6.81	0.93
Vertical spindle housing	1	1.62	1.62	0.22
Camshaft bevel sprocket	1	3.15	3.15	0.43
Crankcase, top half	1	107.00	107.00	14.68
Crankcase, bottom half	1	73.50	73.50	10.09
Bearing caps	7	2.27	15.93	2.19
Main holding - down bolts	14	0.75	10.50	1.44
Thrust race complete	1	5.28	5.28	0.72
Airscrew hub	1	11.31	11.31	1.55
Carburetters	1	24.06	24.06	3.30
Induction pipes	2	4.25	8.50	1.16
Exhaust pipes	6	2.33	14.00	1.92
Oil pump	1	11.81	11.81	1.62
Oil leads with relief valve	1	4.56	4.56	0.62
Magnetos	2	14.37	28.75	3.94
High tension leads with casing	1	4.75	4.75	0.65
Magneto and throttle controls	1	2.12	2.12	0.29
Water pump	1	7.62	7.62	1.04
Water pipes	1	6.56	6.56	0.90
Air pump	1	1.62	1.62	0.22
Rev. counter drive	1	0.75	0.75	0.10
Gun gear with case	1	5.81	5.81	0.80
Miscellaneous parts	1	28.09	28.09	3.85
Total			728.50	100.00

A.B.C.

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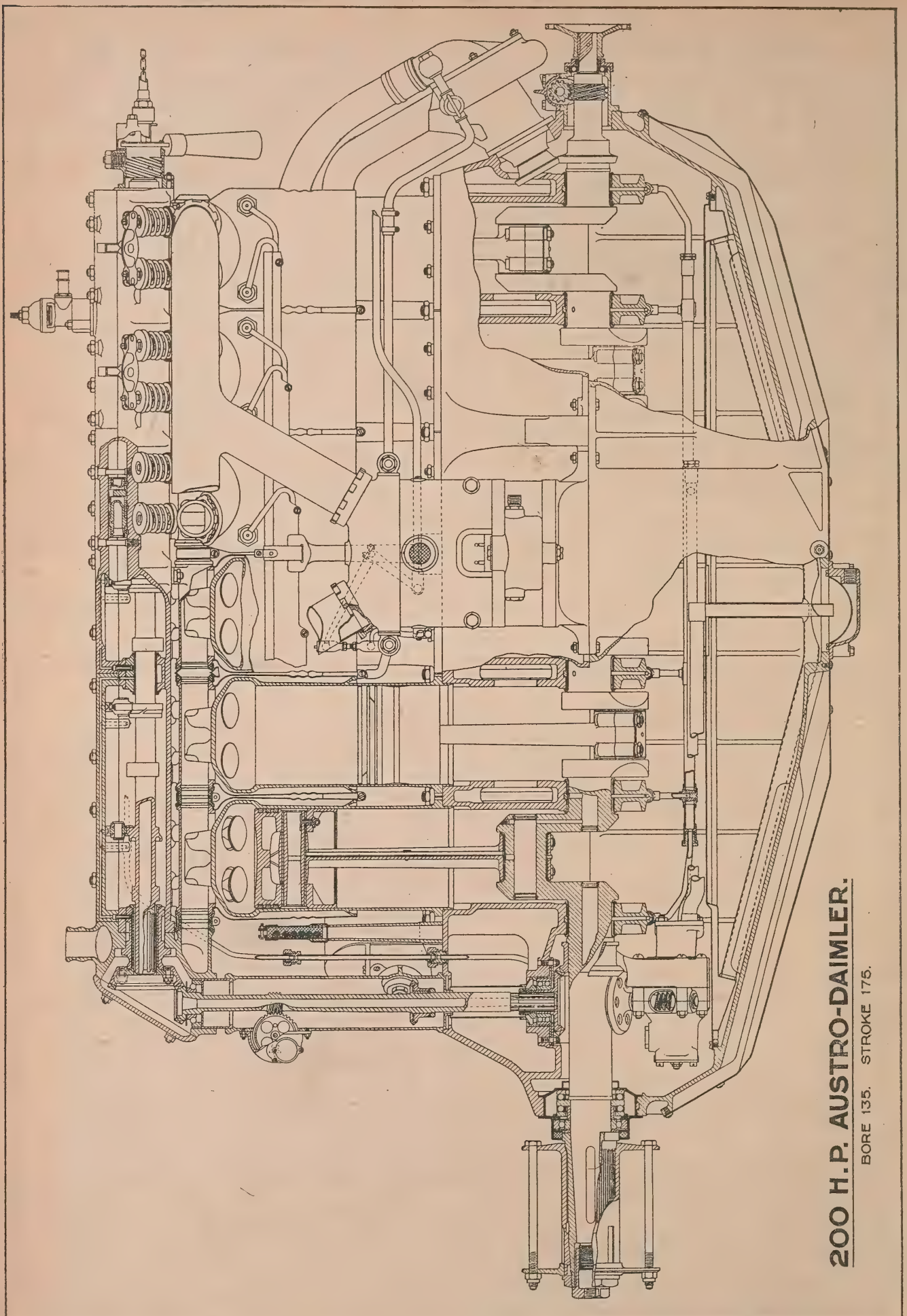
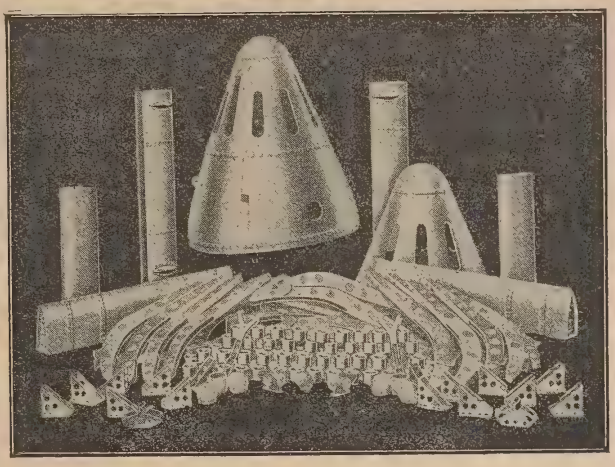


Fig. 29.

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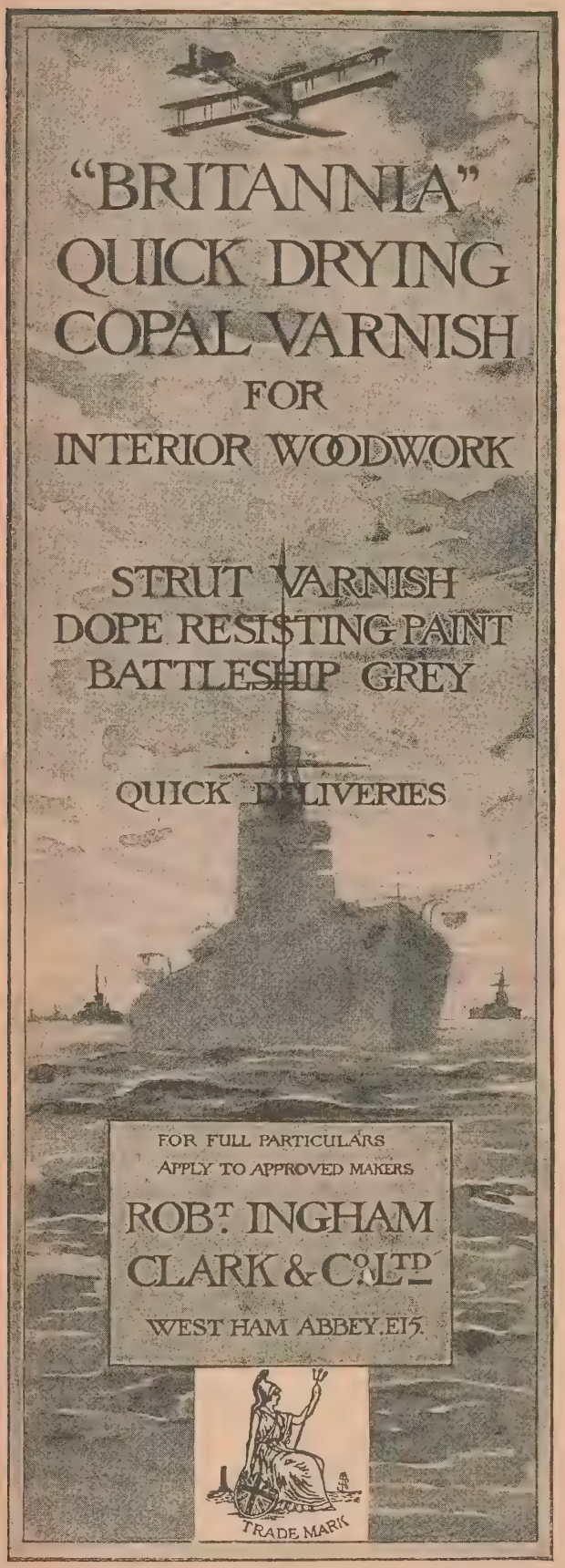
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COMMERCIAL AERONAUTICS

TIME VALUE AND OUTPUT RESTRICTION.

By "Medway."

This note is not a dissertation on the immensely important subject of restriction of output in factories and its effect upon the cost of production. It is, however, suggested by reading various articles and books on that subject.

Let us start with an acknowledgment that the cost of a ticket between, say, London and Paris, will, for a long time to come, be higher by aeroplane than by rail and boat. Some people are inclined to stop at this point and to say, "Well, that shows that nobody will use an aeroplane service except millionaires and holiday-makers, criminals flying from justice, or financiers in a mortal hurry to bring off a big deal." In other words, the contention is that the average man will not travel by aeroplane because he will not be able to afford to do so.

Now, without any desire to attract attention by making astonishing statements, I suggest that exactly the opposite will be the case. The average man of any capacity worth mentioning *will* use the aeroplane service, because he will be unable to afford *not* to do so.

Plain Logic.

He will use it for the same reason that he travels by train instead of walking five or 10 miles from his home to his office. He will use it for the same reason that he sends a telegram for 9d., or puts through a trunk call on the telephone instead of dispatching a letter or a post-card.

When the man in a West-end office wants to communicate with a friend in the City, he rings him up on the telephone instead of sending an office boy with a message. He does it because it is quicker, and would, therefore, be cheaper in 99 cases out of a 100, even if the rates charged for the use of the telephone were six times what they are.

Time is Money.

Let it be noted seriously that the value of time is going up. The only thing that can stop it from rising is the antagonistic principle of deliberate restriction of output.

If a bricklayer can comfortably lay a thousand bricks in a day but refuses to lay more than five hundred, he is obviously wasting time. He often adopts this principle under the impression that if he gets on too fast he will finish his job before he is wanted for another one. He works on the assumption that there is just so much work to be done, and that if he gets through it too fast, he will be out of employment. He has not sense enough or education enough to realise that the demand for the services of the bricklayer depends very much on the cost of the building which he erects.

If the whole business community were to adopt the same idea, the business man would walk from office to office instead of using the telephone so as to have more business left to do at some future date. It is inconceivable that the business community, as a whole, will ever be such an ass as to follow the lead set by the socialistic agitator, who deliberately educates the manual labourer wrongly, not because it is good for the labourer, but because the consequence is likely to be to cause dissatisfaction with the existing state of affairs and to lead to revolution, which is what the agitators really want.

Speeding Production.

I am, however, drifting off to the old subject. My point is that if an aerial service is available and people deliberately refuse to use it despite its higher speed, they are restricting the output of their brains and hands. They are deliberately reducing the value of the individual to the community by wasting his time.

All progress in civilisation has really taken the form of time-saving devices. The difference between a savage and a civilised man is that the one realises the value of time and the other does not. Lacking this realisation, the savage is content with slow means of achieving his end.

All of us are in some degree savages. We resent the quickening-up process upon which we are really dependent for our prosperity. As a community we resented the arrival of the railway train in place of the stage coach. We resented the supersession of the horsed vehicle by the motor-car. We resented the introduction of labour-saving machinery capable of making workers ten times as effective.

The saving of time is equivalent to the saving of money or of personal property. A representative trade union of pilots could make commercial aeroplane services worthless, or nearly so, by adopting restriction of output, or, in other words, refusing to cover more than a given mileage in a given time. So, for that matter, could the railway man prevent full use being made of the railways.

Workers in aeroplane factories could also impede development of aerial services by the application of a similar principle to their output. This is a much more likely cause of trouble, but the idea of restricting mileage is no more stupid than that of restricting production.

The Value of Time.

However, our point at the moment is that we must all realise the value of time in money. If a man is paid £2,000 a year or, say, £40 a week, on the assumption that he will work with his brains for about forty hours in the week, then his time is worth £1 an hour, and if his employers can save five hours of his time on the journey between London and Paris, they are the gainers, provided that the extra cost of his ticket by aeroplane is something less than £5.

The principle is one which is not easily recognised in comparatively small matters. We often find that a man will grudge spending a few shillings on a taxi when, by its use, he can save an hour which might be worth two or three pounds to him. Business tends more and more to go to those who show the greatest promptness. It is the man who gets there first who secures, and deserves to secure, the best job.

Holiday Time.

The same argument really applies when it is only a question of using the aerial service for the purpose of getting away for a holiday or a week-end. From the real holiday must be deducted the time occupied on the journey. The duration of the holiday is measured from the time of arrival to the time of departure.

If one can get the same number of hours free at the week-end while leaving business several hours later, then the holiday has cost less, the saving being the value of those extra business hours which must be set against the extra cost of transit. The fact is that the proverb, "Penny Wise Pound Foolish," is much more sound when applied to business matters than is the contradictory proverb, "Take Care of the Pence and the Pounds will Take Care of Themselves."

The Bigger Saving.

When it comes to taking really long journeys, the true economy of aerial transport will be more easily recognised. It is customary, when a man is sent out on business, for his firm to make a reasonable allowance for his daily expenses. If the total time occupied can be cut down by saving time on the journey, then this item of personal expenditure can be materially reduced and the saving set against the extra cost of the aerial fare.

It is worth noting, however, that the full advantage cannot be taken of any speedy method of transport unless the service which it offers is a frequent one. A comparatively slow but very frequent service may be more efficient as a time-saver than a more rapid but less frequent one.

For this reason an aerial service conducted in the interests of a business community, ought, if possible, to be a frequent service from the start. Otherwise, it will never really commend itself for its main purpose.

We must remember that many fairly long railway journeys can be performed by travelling over-night without trespassing on working hours. At the same time, a man who has slept in a railway train is seldom as fit for business the next day as a man who has slept comfortably in a bed.

Leaving London for Paris in the evening by aeroplane, it would be possible to put in a good night at a Paris hotel before getting to work. If the journey were made by railway and boat, the night's rest would be frequently interrupted. The speed of the aeroplane will be very advantageous also in enabling much longer journeys to be made in the course of a night, but this will mean silent engines and comfortable sleeping-cars if the traveller is to be fit for anything in the morning.

These remarks I am afraid are rather rambling, but I hope that they suggest a source of economy which is not as yet very fully appreciated and will serve as an answer to those who pooh-pooh the idea of aerial services simply on the basis of their higher operating costs as compared with the railway.

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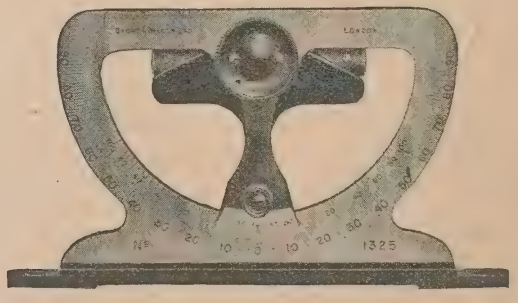
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Oct. 24th, 1918.

COPPER.—Deliveries of Copper continue to give satisfaction. The output statistics do not, however, show any increase, and it is estimated that the total output for the year will be far behind the figures for 1917.

The chief concern at present in U.S.A. is the labour question, the reduction in output being chiefly attributed to the withdrawal of men from the mines and refineries for military service. It is expected that steps will be taken shortly to ease the position.

Prices are unchanged. The result of the price conference is awaited with interest.

TIN.—This market is very quiet indeed, and buyers appear to be holding back, probably expecting that the Allied Tin Control Executive will shortly fix a price which will apply to all countries.

It is more than likely that the Executive will fix the price of Tin, and it is further expected that the price will be much lower than the prices ruling at present.

Certain sections of Tin producers are complaining of the methods which are being adopted by the Executive It was, of course, expected that some people would object, and, while the methods adopted may not appear reasonable to interested parties, it must be admitted that when the price of Tin reached £400 it was time drastic steps were taken to put an end to the profiteering which was being carried on.

The centralisation of buying did create a monopoly, but the method adopted was certainly the best available, and has, so far, proved to be most effective.

Supplies are at present coming forward fairly well, and although stocks are low, there does not appear to be any fear of a shortage.

Comparative Prices.

To-day (Oct. 21st)	£331 10 0
October 15th	£335 10 0
Two months ago	£396 0 0

LEAD.—The situation here is fairly satisfactory, but there is a shortage in U.S.A., due, apparently, to the shortage of labour at the refineries.

The official prices remain unchanged.

STEEL.—The chief concern of producers at present appears to be the position after the termination of hostilities, and the question has been discussed freely during the past week.

It is generally agreed that there will be huge demands upon the mills for shipbuilding, railways, and other domestic purposes. Buyers are watching the position very carefully, and are not very keen to book forward contracts.

Supplies are very satisfactory, and prices remain unchanged.

TIMBER.—The position is not yet very satisfactory, recent supplies of Aircraft Timber being far below the consumption, which is increasing every week. There have been a few shipments of substitute Timber recently, and the quality is reported to have been very good.

The plywood position is, unfortunately, unsettled. Manufacturers are apparently of the opinion that the prices fixed by the Controller will not enable them to produce the boards at a profit. If their statement is correct, then the obvious result will be reduced output, and this is very undesirable at present.

There are fairly large quantities of Ash procurable at present, and deliveries of Mahogany are also fairly satisfactory. Prices are unchanged.

FABRIC.—The position at present is fairly good, although the possibility of a shortage being experienced during the next three months is not a remote one.

It is very difficult to obtain tapes, and stocks should be carefully watched.

FORGINGS AND CASTINGS.

The Minister of Munitions, under date Oct. 18th, orders that every person engaged in the production of ferrous forgings or drop forgings or castings shall furnish to the Controller of Forgings and Castings Ministry of Munitions, 8, Northumberland Avenue, London, W.C.2, such particulars as to output, plant, and workpeople employed by him, and as to his orders and contracts in such form and at such times as the Controller of Forgings and Castings on behalf of the Minister of Munitions shall from time to time direct, and shall verify the same in such manner as the said Controller may require.

THE MONTHLY MARKET PRICE LIST.

Sept 19th, 1918.

The prices given below are the prices ruling on the above date.

Aluminium.*

Ingot	£225 per ton.*
Remelted	£210 per ton.*

Brass.

Sheets	16½d. per lb.
Strip	15⅝d. per lb.
Wire	15⅝d. per lb.
Tubes	17¼d. per lb.
Castings	16d. per lb.
Turning Rod	14¼d. per lb.
Brazed Tubes	19½d. per lb.

Copper.*

Ingot, Standard, Cash	£122 per ton.*
Ingot, Standard, 3 mos.	£122 per ton.*
Best Selected (Nett)	£135 to £131 per ton.
Sheets	£161 per ton
Wire	17d. per lb.
Tubes, S.D.	20½d. per lb.
Tubes, Brazed	20½d per lb.
Rivets	2s. per lb., basis.

Fabric.*

Linen, R.A.F., 17C, Spec., 36 in. wide,	3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38in. wide,	3s. 3d. p. yd.
Linen, R.A.F., 17C, Spec., 42 in. wide,	3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide,	2s. 1d. p. yd

Gun Metal. A.B. Specification.

Castings	2s. 3d. to 2s. 6d. per lb.

Lead.*

Virgin Pig	£29 per ton, c.i.f.
Virgin Pig	£30 per ton, ex stores.
Sheets	£39 10s. per ton, D/d.
Pipes	£40 per ton.
Dry White	£46 10s. per ton, less 5 per cent
White in Oil	£53 per ton.
(lots over 5 cwt. less 5 per cent.)	
White in Oil	£55 per ton.
(lots under 5 cwt. less 5 per cent.)	
Red	£42 per ton, less 2½ per cent.

Nickel.

Nickel	£250 per ton

Phosphor Bronze.

Ingots, 5 cwt., and under	£168 to £198 per ton
(Subject to Copper and Tin Fluctuations.)	
Castings	1s. 9d. to 2s. 2d per lb.

Phosphor Copper.

Ton lots	£200 to £205 per ton.

Silver.

Silver	49½d. per oz.

Solder.

Plumber's	134s.
Tinman's	180s.

Steel.

High Speed, 14 p. cent., Tungsten,	3s. 8d. per lb., basis.
High Speed, 18 p. cent., Tungsten,	4s. 5d. per lb., basis.

Alloy Steels to Air Ministry Specifications.*‡

Round and Square:—

Specification No. S2	£86
Specification No. S2 (bright-drawn)	£115
Specification No. S8	£86
Specification No. S10	£70
Specification No. S12	£75
Specification No. S14	£43
Specification No. S15	£70
Specification No. S16	£70
Specification No. S17	£75
Specification No. S18 (oil-hardened)	£85

Specification No. K1	£75
Specification No. K2	£75
Specification No. K3	£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.

HEXAGONS.

	.455 and .525	.601 to .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

SPELTER.

English f.o.b., Birmingham ..... £54 to £50.

TIN.

Tin ..... £334 10s.

TINPLATES.

Tinplate ..... 32s. 6d., basis, f.c.t.

TIMBER.

	†Official.	Merchants.
Silver Spruce,		10s. 4d., c.f.
*English Ash—		
Selected Logs		7s. 6d., c.f., f.o.r.
Selected Lengths of Planks		10s. 6d., c.f., f.o.r
Mahogany		2s. to 2s. 6d.
Walnut		2s. to 2s. 6d.

* For further details see Home Grown Timber Prices Order.

ZINC.

Zinc Sheets (American)..... £100, f.o.b., New York.

SCRAP MATERIALS (LONDON PRICES).

ALUMINIUM.

Description.	Price per ton on sale to refiner, delivered at refinery.
Sheet cuttings and rods containing a minimum of 96 per cent. Al.	£160 0 0
Old rolled, etc., containing a minimum of 96 per cent. Al.	120 0 0
Spinnings, punchings, and thin small scrap; also painted and varnished scrap that needs melting, containing a minimum of 96 per cent. Al.	105 0 0
Lump scrap from aero castings and material of equivalent value, containing 87 to 96 per cent. Al.	100 0 0
Turnings and Swarf, generally containing 87 to 95 per cent. Al.	87 10 0
Scrap, generally containing 80 to 86 per cent. Al.	80 0 0
Swarf and inferior Swarf, generally containing 80—85 per cent. Al.	70 0 0
All Scrap, containing below 80 per cent Al., not to exceed	65 0 0
All Swarf, containing below 80 per cent. Al.	50 0 0
Brass, Heavy Selected	£90
Copper, Clean	110
Copper, Brazery	90
Gun-metal, Scrap	124
Lead, no Draft	26
Zinc, Old	43

* Official Prices. † Includes Parcel Inspection only. ‡ Prices include Delivery in the U.K.

THE PRODGER-ISAAC AVIATION COMPANY.

The development of the Prodger-Isaac Aviation Company, which is the only firm of practical experimental pilots, has necessitated increased office accommodation.

The administrative offices have, therefore, now been removed from 166, Piccadilly, W.1, to premises at 13, Sackville Street, Piccadilly, London, W.1.

The telephone number remains as before—i.e., Gerrard 278 (two lines); and the telegraphic address, "Aeromnia, Piccy, London," is also unchanged, but both are now available for day and night service.

The new premises will include a well-equipped drawing office, where Mr. Clifford B. Prodger may be personally consulted in connection with aeroplane designs, by appointment.

The firm is now in a position to furnish complete pilots' reports on experimental flights or proposed designs, and will survey and submit reports on aerodrome sites and other matters in connection with which a practical pilot's opinion is of value.

The firm can also quote low rates through its brokers at Lloyd's for the insurance of aircraft during experimental, acceptance, or delivery flights.

Mr. Prodger's reputation as a practical experimental pilot on land machines and seaplanes of every conceivable type from a single-seater "scout" to a huge "bomber" particularly Handley-Page machines and "America" flying boats), is too well known to require further mention here. There is no doubt that this firm's experience and co-operation will be invaluable to the aircraft industry in the preparation of designs and in the carrying out of experimental flights in connection with the organisation of post-work aerial mail, passenger and merchandise carrying services, and in the production and demonstration of land machines and seaplanes for Naval, Military, sporting, and private uses.

It is safe to expect that Mr. Prodger will be asked to undertake the initial journeys on some of the great mail and passenger-carrying air lines that are to commence immediately after the war, and thus his services are certain to become important.

Mr. Prodger is ably assisted by Mr. J. Lankester Parker, an experimental pilot of sound ability, and the business matters of the firm are conducted by Mr. Bernard Isaac, whose connection with aviation goes back to the very early days, and whose recent book, "Standard A.G.S. Parts for Aircraft"—("The A.G.S. Book") and A.G.S. Charts and Tables are used so extensively in the Aircraft Industry and the Flying Services.

Mr. Isaac has also published several valuable articles on aeronautics, including "On the Standardisation of Minor Aircraft Parts" and "The Future of the Aircraft Industry" ("Times" Trade Supplement, April, 1918).

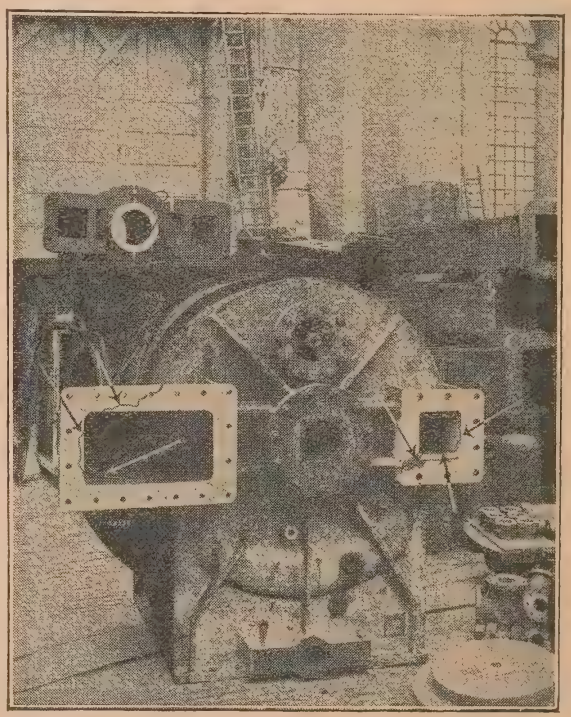
Mr. Prodger and the pilots who assist him are at present engaged in making important experimental and delivery flights on various types of machines on behalf of the Air Ministry.

Enquiries are invited, on receipt of which the firm will quote low inclusive terms covering all requirements.

AN AMBITIOUS WELDING REPAIR.

Although not directly connected with aircraft production, the following account of a repair is sufficiently suggestive of future giant aero engine overhauls to warrant its publication.

The low pressure, high pressure, and intermediate cylinders of a triple expansion marine engine of the approximate weight of 30 tons, belonging to an 8,000 ton vessel, were badly fractured. Barimar Ltd., the famous welders, were asked to inspect the cylinders with the view to repair, and they promptly undertook the work, using during the operations 21,000 ft. of acetylene and 30,000 ft.

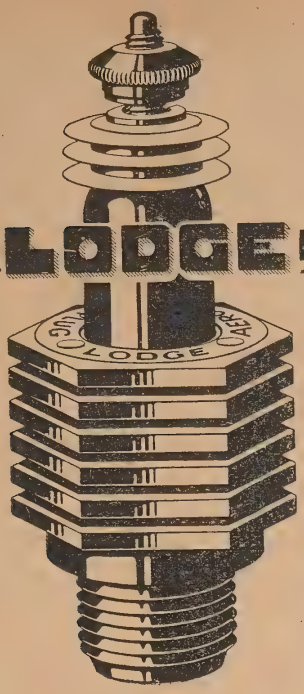


The Fractured low-pressure Cylinder.

of oxygen, with which to heal fractures extending over a length of some 14 ft. 6 in. with a thickness of metal averaging 3 in.

Some idea of the importance of this work may be gathered from the fact that the approximate value of the complete engine was £150,000 and the three cylinders repaired £50,000, but such is the present condition of affairs that replacements were absolutely unobtainable.

Notwithstanding the severe injuries sustained by the cylinders, two skilled welders were able to make perfectly satisfactory repairs within a period of five days at an insignificant fraction of the original cost of the parts, and the work, which was done in an important North British yard, was duly approved by Lloyd's officials.



LODGE

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G. H MANSFIELD, Managing Director.

ASCOL

AIRCRAFT FINANCE

CURRENT TOPICS.

A Bank's Significant Departure.

When one of the municipal English banks assumes the rôle of an issuing house, pending an appeal to the public to subscribe for some new capital of one of our leading industrial undertakings, it is useless to contend that our bankers are not "getting a move on." The new issue in question consists of some preference shares of Thos. Firth and Sons, Sheffield, and the bank is the London Joint City and Midland.

Signs of the Times.

German banks have always entered into this class of business, which has previously been the monopoly of certain big financial groups in this country. The German industrial banks, which have often been cited as an example of perseverance and success in stimulating trade, rarely associated themselves with any but first-class investments. In time the British banks will prove that they have secured a more intimate relationship with the trade and industry of our country. Several of them, by the way, are preparing to increase their capital so as to be able to develop: one, the National Provincial, has already published particulars of the additional capital. Unless appearances are deceptive, our banking institutions have awakened: necessity compels them to move with the times; no longer can they be passive, they must actively participate in trade.

Stock Markets Restrained.

Unsettled by the Peace Offensive the Stock Exchange behaves very well, all things considered. The feeling is sanguine enough but restrained. Even essentially armament shares are not falling away much, now that Germany has shown her hand, while the demand for "Peace" securities is rather less aggressive than would be the case if one could conscientiously single out a stock, now quoted at a reasonable price, that is likely to bound upward simultaneously with the actual declaration of peace.

Dope Committee asks for Evidence.

The British Cellulose Inquiry Committee advertises its existence, its *raison d'etre* being "to inquire into and report upon the formation and financial arrangements of the British Cellulose and Chemical Manufacturing Co., Ltd., and associated companies, and upon their relations with Departments of the Government." Any person desirous of giving information to the Committee on all or any of the matters falling within the above terms of reference is requested to furnish to the Committee in writing his name and address, a short description of the nature of the information proposed to be given, and the name and address of any person or persons who will give evidence to the Committee thereon, specifying the point or points on which each witness will give evidence. All communications should be addressed to the Secretary, British Cellulose Inquiry Committee, Committee Room No. 4, House of Lords, S.W.1.

Ministerial Statement.

Subsequently the matter cropped up in the House of Commons, when Mr. George Lambert asked if the Prime Minister would state when the report of the Committee would be presented to Parliament, and whether directors and officials of the company were serving the Government in any capacity. In reply, Mr. Bonar Law said that the Committee expected a complicated and prolonged inquiry, and he was not in a position to make any statement. So far as he was able to ascertain, the answer to the second part of the queston was in the negative.

Not too Prolonged, Let us Hope.

Anyone might have expected that the inquiry would be complicated: it is, one need scarcely emphasise, a very complicated business, and that it would be prolonged was also obvious. The question is: Will it prove so complicated and extend over such a prolonged period as to nullify its genesis? One wonders. Anyway, it may be interesting and illuminating.

French Blériot Capital.

The French Blériot Company is increasing its capital from 2,600,000 francs to 4,000,000 francs by the creation of 20,000 new 100 franc shares. These are to be offered to existing shareholders at the price of 110 francs. At the same time, it is proposed to divide up the reserve fund, which operation will work out at 50 francs per share.

Flying the Atlantic—on Paper.

What's in a name? Under the high-sounding title of the Anglo-American Aerial Services, Ltd., there has just been registered a new company for the purpose of forming, establishing, maintaining, and working lines of aerial conveyances between the United Kingdom and the United States, Canada, South and Central America, and for carrying on the business of manufacturers of and dealers in aircraft, hangars, and aerodome proprietors, tourist agents and contractors, etc. The fact that the nominal capital is £100, in £1 shares, signifies nothing; it is merely the beginning, but it does sound incongruous with such an ambitious plan of campaign.

Hun Metal Octopus.

The process of eliminating the predominant Teuton influence from the metal trade of this country and the world generally is assuming an interesting phase. A well-thought-out scheme on a fundamentally sound basis ought to achieve the desired object if it receives the moral as well as the practical support of the nation. It must not be imagined that the mere enactment of a few laws, no matter how excellently conceived and designed, will permanently disable the solid structure erected by years of painstaking work on the part of the Germans. By constant effort, patience, and determination, hard work, and successful struggling, the octopus may be reduced to impotence.

British Corporation Formed.

It now transpires that a venture called the British Non-Ferrous Metals Corporation will see the light of day soon with a capital of about £5,000,000. Sponsored by the important metal broking firm of Vivian, Younger, and Bond, in close association with the big Rio Tinto Company and other leading British producing interests, the new concern will acquire, amongst other things, most of the remaining assets of Henry R. Merton and Co. (in liquidation). Of course, it is generally known that the principal assets have already been secured by the Central Mining and Investment Corporation, one of the leading financial institutions associated with the Transvaal gold mining industry.

Solid Financial Backing.

The standing of the financial interests behind this movement for eliminating the Hun element augurs well, as also does the reputation of those to be associated with the executive of the new ventures. Possibly, similar action will be taken by France and the United States, in neither of which countries are the German influences regarded with favour.

Good Bowden Brake Profits.

Substantially larger gross profits were made by the Bowden Brake Co. last year. This is just what was to be expected, the total being £48,800, against £35,000, but at the same time working expenses expanded considerably, which may be attributed, perhaps, to the Excess Profit Duty, so that the net profit is only about £3,000 higher at £8,300. Nevertheless, it is practicable to pay the bigger dividend of 12½ per cent., against 10 per cent., free of income tax, and add £500 more at £2,500 to the reserve, as well as write down premises by £1,500, against nil, provide £500 for the benefit of employees, and carry forward £7,314, an increase of about £300. The capital is £27,614, of which £5,229 is in 6 per cent. cumulative participating Preference shares and the balance in 10s. ordinary shares. The reserve now figures at £10,000. Stocks amount to £38,779.

Ball Bearings.

The supply of ball bearings in this country was before the war very largely in German hands. But the making of them now looks like becoming a very solid British industry. At the annual meeting of the Ransome and Marles Bearing Co., the chairman announced that the divisible profit of the concern, after writing off the whole of the formation expenses of the enlarged company, etc., was £15,535, and moved the payment of a dividend of 15 per cent. per annum, less income tax. He also reported that sales and output were steadily increasing, and that the board had every expectation that the full output of the present plant, estimated at £40,000 worth of bearings per month—or nearly half a million pounds per annum—would be reached, and even exceeded, within a few months.

AIRCRAFT NOTES AN IMMEDIATE SUCCESS.

As was usually expected, the prospectus of the Aircraft Manufacturing Co. issue of £250,000 7 per cent. short term notes attracted a great deal of interest, with the result that large subscriptions necessitated the closing of the lists before the date fixed.

A TRADE MOVE.

According to the "Daily Telegraph," a Cardiff telegram states that a controlling interest in the firm of Samuel White and Co., East Cowes, has been acquired by Mr. Archibald Mitchelson, of Messrs. A. Mitchelson and Co., the purchase price being about £500,000.

NEW COMPANIES.

A. CAMDEN PRATT & CO., LTD.—Private company. Registered October 24th. Capital, £20,000 in 12,000 10 per cent. cumulative preference shares of £1 each and 64,000 ordinary shares of 2s. 6d. each. Aeronautical, marine, and general engineers, manufacturers of and dealers in machinery, tool-makers, metal-workers, iron and steel converters, smiths, wood-workers, builders and contractors, engine and automobile manufacturers, coach-builders, ship builders and repairers, etc. The subscribers (each with one preference share) are:—A. Camden Pratt, A.M.I.C.E., 31-33, High Holborn, W.C., aeronautical engineer; Capt. A. Payne, 31, High Holborn, W.C., aeroplane designer. The first directors are:—A. Camden Pratt, A.M.I.C.E., and Capt. A. Payne.

WILSON, WARDEN, AND CO., LTD.—Private company. Registered Oct. 21st. Capital, £1,000 in £1 shares. Barometer, meteorological, scientific, and surgical instrument, thermometer, barograph, and appliance manufacturers, glass blowers, etc.

SATISFACTIONS, MORTGAGES, AND CHARGES

AIRCRAFT MANUFACTURING CO., LTD.—A mortgage for £400,000, dated Oct. 15th, 1918, has been registered. Property charged:—The company's undertaking and property, present and future, including uncalled capital (if any), and specified lands at Henden, Kingsbury, and Buckingham Gate. Mortgagees:—R. M. Rowley Morris and H. L. Smith, 222, Strand, W.C.

BOURNEMOUTH AVIATION CO., LTD.—Satisfaction in full Sept. 30th, 1918, of debentures dated April 30th, 1918, securing £1,000.

A. G. S. MANUFACTURING CO., LTD.—Mortgage dated Oct. 15th, 1918, to secure £25,000 charged on the company's undertaking and property, present and future, including uncalled capital (subject to a mortgage dated June 12th, 1918). Holders:—Ministry of Munitions.

SPARE HALF-HOURS.

At the present time, when the utmost amount of work is required from employes, a little recreation during intervals in working-hours will be appreciated by the workers.

At the works of Humphries & Dawes, Birmingham, arrangements have been made for a series of half-hour concerts during the mid-day meal hour. These concerts will take place at regular intervals during the week, and the first to be held was well attended.

The Humphries & Dawes Choral Society has been formed, in which over 50 persons have already been enrolled. The directors have presented the society with a piano and are giving their best support to the organisation.—R. M.

AVIATOR'S INSURANCE.

Mr. John Robertson, joint general manager, Northern Assurance Company, said at a meeting of the London Insurance Institute on Oct. 28th.:—"I hope that insurance companies will soon include in their prospectuses insurance against risks to machine and to life and limb in travelling in the air, which, after the war, will be one of the commonplaces of everyday existence."

THE AMERICAN SPIRIT.

From the "Air Service Journal," New York, Sept. 12th, 1918:—

Men who are engaged in the production of Liberty engines in a motor-car company's factory are constantly impressed with the patriotic nature of their work.

Huge posters with patriotic appeals are published periodically and hung on the walls throughout the shops. The most recent poster, addressed to "You who build Liberty engines," shows an American aeroplane in action showering machine gun-fire on a horde of Huns, and reads af follows:—

"You who build Liberty engines, keep thinking of the man who is going to use them, and build them with the spirit of the fighting man!

"Keep thinking of that man in the air, you fellows with both feet on the ground, and remember that his fight depends on the weapon you furnish him.

"Keep thinking of the horrors on the Western Front, and build the engines as tried and true as the brave boys who ride behind them.

"Bend your muscles till they creak, and pray God that every bolt and cotterpin you put into the Liberty engine may do its part in bringing our brave boys back to their own line!"

INDIGENOUS FUEL SUPPLIES.

The following letter was published in the "Times":—

To the Editor of the "Times."—Sir,—Statements made in the House of Lords on Tuesday last (Oct. 22nd) during the debate on the Petroleum Bill revealed ignorance of the facts or a disbelief that any firm or individual could be willing, without ulterior motives, to present to the nation a discovery possessing huge financial possibilities. Whichever the cause may be, I desire, through your courtesy, to remove some of the more misleading impressions created.

(1) Prior to 1914 it was almost universally believed that the chances of finding oil in Great Britain were non-existent. Dr. Veatch, the head of my geologic staff, thought differently, and seized the opportunity of a break in his other work to turn his attention to England. Geology and chemistry were prompt to confirm his anticipations and to justify us in an attempt to make leases.

(2) The Admiralty, as the Department principally concerned, was advised by us in confidence of our discovery and of our leasing programme, and when, in the spring of 1917, the shipping situation became acute they asked us to drill forthwith as a matter of grave national urgency.

(3) I had to reply that, whilst on broad lines we were in agreement with a number of landlords, yet no leases had actually been signed. The form of lease was novel, and the lawyers had been slow in getting them into shape. Furthermore, there was no immediate prospect of sufficient leases being signed to cover the whole of even one oil-pool, and from my personal knowledge of the disastrous conditions which invariably accompany indiscriminate drilling on small areas I was not prepared to initiate this system here. If production from the home-lands was so vitally needed, the Government should, I suggested, take the necessary steps to safeguard the industry against indiscriminate drilling. In this case I had no alternative but to place my firm's services at the free disposal of the Government. To have conserved my discoveries for my private benefit under such conditions would have been criminal.

The result of these discussions with the Admiralty was the introduction of the first Petroleum Bill and, at the request of the Government, the shutting down of our leasing programme.

(4) After the Petroleum Bill had been rejected the Government brought pressure to bear upon me to proceed with drilling under D.O.R.A. and without any legislation. I declined to do this, as I believed—and still believe—that I was performing the better public service by refusing to drill until the industry was controlled by legislation.

(5) After numerous discussions and tantalising delays, and after I had felt free to reopen negotiations with landowners, I wrote to the Press on March 1st, offering either to drill on my own behalf, which meant a probable expenditure of £500,000, or, alternatively, to disclose my discoveries and to drill, free of all remuneration, as agent for the Government, subject always to the necessary legislation. The result of this letter was that the Government undertook to protect oilfields.

(6) Removed from the fog of suspicion, our position is perfectly clear and simple. I submit the "partiality" shown to my firm has consisted solely in the nation being willing to accept what we alone were in a position to offer in a time of stress, and which we offered voluntarily, realising to the full what it meant.

A general idea seems to prevail that my offer entailed only the services of my geologic staff; whereas, as a matter of fact, in giving the results of their four years careful scientific work, I give what is a huge potential fortune. We have no monopoly, we receive no recompense for our services, nor have we any favoured status or position, but we are justified in expecting that when the time comes the Department responsible for issuing permits to drill will not be deterred by the cries of our competitors from placing us in as good a position as any other licensees.—Yours faithfully,

COWDRAY.

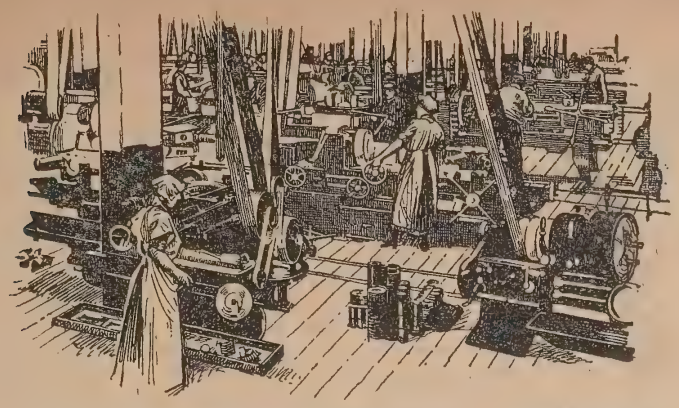
16, Carlton House Terrace S.W.1, Oct 24th.

RETURNS AS TO RUBBER.

The Minister of Munitions has issued an Order requiring a return to be made on or before 7th November of all raw rubber and all waste and reclaimed rubber in the United Kingdom by all persons who on 31st October held or controlled stocks exceeding one ton. The return must be made to the Controller of Rubber, Ministry of Munitions, 1, Grosvenor Place, London, S.W.1.

FOR A GOOD CAUSE.

On November 7th Mr. Harry Tate has arranged a Matinée at the London Hippodrome in aid of the Tank Corps Prisoners of War Fund under the patronage of the King and Queen. Definite promises of support have been received from many famous artistes, including Mr. George Robey, Mr. Arthur Prince, Miss Violet Loraine, Miss Margaret Cooper, Mr. Harry Weldon, Mr. Harry Dearth, Miss Phyllis Bedells, and in addition the band of the Welsh Guards and the pipers and drummers of the Scots Guards will appear by permission of their respective Commanding Officers.



THE MACHINE SHOP

AND——

THE FINAL PUSH

We are all anxiously waiting for it—Looking forward to the time when the Armies and Aims of our enemy will be shattered in the final battle!

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(*Continued from page 1574B.*)

27th; E. G. Taylor, Oct. 2nd; H. L. Northey, Oct. 12th; E. R. Rudling, Oct. 19th.

Lts. to be Lts.:—H. F. L. Codner, from (Dir.), Oct. 9th; W. O. Hatcher, from (O.), Oct. 14th.

Lt. (temp. Capt.) F. C. Staines to be Lt. on relinquishing appt and temp. rank of Capt., Sept. 3rd.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—Hon. Capt.) G. H. Green, May 26th; (Hon. Lt.) L. Cable, June 1st; N. Openshaw, July 1st; D. Beaumont, Aug. 1st; L. Butterfield, Aug. 12th; (Hon. Lt.) E. H. Eldridge, J. M. Moore, Sept. 1st; J. S. Archer, Sept 30th.

J. Freeman-Fowler is granted a temp. commn. as Lt., April 1st. (Substituted for notification in "Gazette," April 26th

R. Blackwood (late Lt., Notts and Derby R.), is granted a temp. commn. as Lt., Oct. 19th.

The following are granted temp. commns. as Sec. Lts. and to be temp. Lts. whilst specially empld.:—G. F. Peirson, Sept. 22nd; H. Bradshaw, Oct. 12th; S. A. Snatt (Hon. Maj. and Qr.-Mr., ret. pay) and to be Hon. Maj., J. W. Rimmer, H. H. Brown, H. C. Haywood-Gibbons, J. L. Green, F. L. Letten, T. H. Nunn, E. P. Pearce, R. W. Rochall, T. Scott, H. H. Stone, H. J. Cutler, Oct. 21st; G. A. Middleweek, Oct. 22nd.

The following are granted temp. commns. as Sec. Lts.:—A. E. Ashley, H. Baker, H. P. Bolt, W. J. Brittain, M. H. Child, P. F. Cullen, G. H. Ellis, H. S. Gain, E. G. Harris, P. D. Hind, W. M. Limb, J. Randall (Hon. Sec. Lt., late Serv. Bn., K.R.Rif. C.), S. Saunders, M.C. (Hon. Lt., R.F.A., T.F.), and to be Hon. Lt., H. S. Smith, A. W. Spice, J. H. Stone, C. Sugarman, F. H. Swoffer, R. Worton (temp. Lt., ret pay) and to be Hon. Lt, Oct. 22nd; P. F. Jessop, Oct. 23rd.

The following Lts. relinquish their commns. on ceasing to be empld.:—D. MacKenzie (Lt., Lond. R., T.F.), June 8th; W. G. C. Bittles (temp. Payr., R.N.R.), Oct. 10th.

Lt. (temp. Capt.) D. A. Parsons relinquishes the temp. rank of Capt. on ceasing to hold a special appt. at the Ministry of Munitions, Oct. 3rd.

Capt. J. Gibson (date of commn. Sept. 13th, 1917) relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Oct. 26th.

Lt. L. S. Northcote relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Oct. 26th.

Sec. Lt. A. Spittall relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct. 26th.

Sec. Lt. S. B. Coxon relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 26th.

The following Sec. Lts. resign their commns.:—J. R. Bonnet, J. M. L. Roots, Oct. 26th; the surname of Sec. Lt. L. B. Goodyer is as now described and not as in "Gazette," July 23rd.

Technical Branch.—Sec. Lt. (temp. Lt.) H. Norrington to be temp Maj. whilst empld. as Maj., from (Ad.), Oct 14th.

Lts. to be temp. Capts., while empld. as Capts.:—J. H. Secker, June 1st; S. H. Hewitt, Sept. 1st; E. A. Richards, Oct. 9th; J. Y. de la C. Elliott, Oct. 14th.

Sec. Lts. (temp. Lts.) to be temp. Capts. while empld. as Capts.:—N. Rensley, H. M. Rootham, Sept. 1st

R. H. Parkinson (Capt., R.E., T.F.) is granted a temp. commn. as Capt., April 1st.

E. E. Pash (temp. Sec. Lt., R.E.) is granted a temp. commn. as Lt., Sept. 5th.

Sec. Lts. to be temp. Lts. while empld. as Lts.:—W. Calvert, June 17th; H. J. Lewis, July 1st; (Hon. Lt.) D. L. Hollis, Aug. 1st; F. P. Lambert, Aug. 5th, P. G. Edmonds, S. J. Fountain, W. St. J. Littlewood, H. W. Mason, (Hon. Lt.) A. D. Napier, G. J. H. Stein, D. L. Stewart, D. Warnford-Davis, Sept. 1st; E. J. Williams, Sept. 30th; E. W. Chatterley, Oct. 2nd.

P. S. Reed (Sub-Lt., R.N.V.R.) is granted a temp. commn. as Sec. Lt., and to be Hon. Lt., April 1st (substituted for notification in "Gazette," June 25th.

The following are granted temp. commns. as Sec. Lts.:—R. S. Broderick, Oct. 10th; B. A. Clinging, W. Matthew, Oct. 22nd.

The initials of Capt. (temp. Maj.) O. C. Williams are as now described, and not as in "Gazette," Oct. 15th.

The notification in "Gazette," Sept. 10th, concerning temp. Lt.-Col. Lord A. R. Innes-Ker, D.S.O., is cancelled.

The notification in "Gazette," Aug. 6th, regarding temp. Sec. Lt. W. B. Close, R.E., is cancelled.

Medical Branch.—H. T. H. Butt is granted a temp. commn. as Capt., Oct. 21st.

Memoranda.—Col. (temp. Brig.-Gen. A. V. Vyvyan, C.B., D.S.O., to be actg. Maj.-Gen. whilst specially empld., Oct. 8th

Capt. J. W. Aldridge (S.O.3) is granted the hon. rank of Maj., July 20th.

Sec. Lt. C. A. Luce is granted the hon. rank of Lt., Aug. 21st.

Lt.-Col. C. H. Meares relinquishes the appt of S.O., 1st Cl., Oct. 19th.

Lt. (temp. Capt.) W. S. de Ropp relinquishes the appt. of S.O., 3rd Cl. and the temp. rank of Capt., Sept. 21st.

Capt. J. C. Hanbury-Williams (Lt., Hus., S.R.) relinquishes his commn. on ceasing to be empld., Oct. 23rd.

Capt. (temp. Maj.) Sir J. A. Simon, K.C., K.C.V.O., resigns his commn., and is granted the hon. rank of Maj., Oct. 26th.

War Office, Oct. 28th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Special Appt.—(Graded as a Park Comdr.).—Temp. Capt. H. B. Denton, Gen. List, from an Equipt. Officer, 1st Cl., and to be temp. Maj. whilst so empld., March 1st, 1918.

Admiralty, Oct. 29th.

Foreign Decoration

The following decoration has been conferred on the under-mentioned officer of the British Naval Forces for distinguished services rendered during the war:—

His Majesty the King has given unrestricted permission to the officer concerned to wear the decoration in question.

Decoration conferred by the President of the French Republic.

Legion of Honour.

Officer.

Comdr. Frederick C. Halahan, D.S.O., M.V.O. (now temp. Colonel, R.A.F.).

(The appt. as Chevalier of this Order, gazetted on Jan. 25th, 1918, has been cancelled.)

FROM THE COURT CIRCULAR.

Buckingham Palace, Oct. 22nd.

The following were severally introduced into the presence of His Majesty, when the King invested them with the Insignia of the Division of the Most Excellent Order of the British Empire, into which they have been admitted:—

Members.—Mr. Reginald Cary, Lt.-Col. George Cockburn, Col. Edward Davidson.

Capt. E. W. Leggatt, Wiltshire Regt., attd. R.A.F., and Lt. E. J. Bennett, R.A.F., had the honour of being received by His Majesty.

Buckingham Palace, Oct. 23rd.

The Lord Weir (Secretary of State for the Royal Air Force) had an audience of His Majesty.

The Prince Albert, attended by Maj. Louis Greig, left the Palace this morning and proceeded by aeroplane to France.

Buckingham Palace, Oct. 24th.

The King held an Investiture in the Ball Room of the Palace at 10.30 o'clock this morning.

The following Officers were severally introduced into the presence of the King, when His Majesty invested them with the Insignia of the Division of the Order into which they have been admitted:—

The Distinguished Service Order and Bar to the Military Cross.—Maj. William Kennedy-Cochran-Patrick, R.A.F.

The Distinguished Service Order and the Military Cross.—Capt. Ira Jones, R.A.F.

The King then conferred decorations as follows:—

The Distinguished Service Cross.—Maj. Gilbert Cook, R.A.F.; Maj. Eustace Hallifax, R.A.F.; Capt. Cyril Carlisle, R.A.F.; Capt. Norman Cook, R.A.F.; Capt. Howard Saint, R.A.F.; Capt. Norman Woodhead, R.A.F.

The Military Cross and Bar.—Capt. Kenneth Leask, Devonshire Regt. and R.A.F.; Lt. Arthur Whiteside, R.A.F.

The Military Cross.—Maj. William Thomas, R.A.F.; Capt. Percy Clayson, R.A.F.; Capt. Sylvester Quine, Cheshire Regt., attd. R.A.F.; Capt. John Wallace, R.A.F.; Capt. Horatio Windsor, R.A.F.; Lt. Augustine Kelly, R.A.F.; Lt. Alan McGlashan, R.A.F.

Buckingham Palace, Oct. 28th.

Lt. J. K. Tullis, R.F.A., attd. R.A.F., and Lt. C. W. Blain, R.A.F., had the honour of being received by His Majesty.

Admiralty Appointments.

The following appointments have been made:—

Women's Royal Naval Service.

Oct. 25th.—Asst. Prins.—Miss E. O'Sullivan, to Newlyn R.A.F., July 15th.

Miss E. O'Sullivan to Cranwell, R.A.F.

Miss H. M. Kebbell, to Great Yarmouth R.A.F. (temp.), Oct. 22nd.

OFFICIAL COMMUNIQUES.

MILITARY.

G.H.Q. Communiqués.

Oct. 22nd, 7.18 p.m.—On Oct. 21st, in spite of very unfavourable weather conditions, some reconnaissance work was completed, and over a ton of bombs was dropped on enemy troops and transport.

There was very little activity on the part of the enemy's aircraft. In air fighting one hostile machine was shot down and one was driven down out of control.

Two of our machines are missing.

Owing to the weather conditions, no night operations could be carried out.

Oct. 23rd, 7.18 p.m.—On Oct. 22nd thick mist and clouds continued to curtail our operations, but, in spite of this, a fair amount of reconnaissance and contact patrol work was done, targets were reported to our artillery, and photographs taken.

Casualties were inflicted on enemy troops by bombs and machine-gun fire, and direct hits were obtained on a train. A total weight of three-and-a-quarter tons of bombs were dropped.

There was slight activity on the part of hostile aircraft on the southern battle front, but none was shown elsewhere. In air fighting one enemy aeroplane was shot down out of control and one balloon was destroyed. A German night-bombing machine, caught in the beams of our searchlights, was shot down in flames by Lewis gunfire from the ground.

Three of our machines are at present reported missing.

In spite of adverse weather conditions, some of our night-flying machines succeeded in penetrating a long way behind the enemy's lines and in obtaining direct hits on an important railway station and on other centres of activity, one-and-a-quarter tons of bombs being dropped.

All these machines have returned.

One of our machines is missing.

Oct. 24th, 7.25 p.m.—On Oct. 23rd every advantage was taken of a slight improvement in the weather to maintain active co-operation with our attacking troops. Hostile troops and transport were vigorously attacked from the air with bombs and machine gun fire. A total of nearly six tons of bombs was released by us during the day on different targets.

The enemy's aircraft were very active over the battle front. Thirteen German machines were shot down and four driven down out of control. One German balloon was shot down in flames.

Ten of our machines are missing.

On account of weather conditions, no night flying took place.

Oct. 25th, 7.5 p.m.—On Oct. 24th our squadrons continued their activity along the entire front. Although bad visibility somewhat restricted long-distance operations, many valuable reconnaissances were completed and numerous photographs were taken.

Our machines co-operated with our attacking infantry, and continued to harass the enemy with bombs and machine-gun fire. The railway junction at Hirson was heavily attacked. Photographs show that excellent results were obtained, great damage being caused by bombs bursting among quantities of rolling stock. Over 12½ tons of bombs were dropped.

There was only slight activity on the part of the enemy's aircraft. In air fighting, four hostile aeroplanes were shot down, and four were driven down out of control.

Ten of our machines are missing.

There were no night operations on account of weather conditions.

Oct. 26th, 7.12 p.m.—On Oct. 25th clouds and mist somewhat restricted operations, but our squadrons completed some valuable reconnaissance and contact patrol work. Four and three-quarter tons of bombs were dropped during the day, chiefly on targets in the enemy's forward areas.

Hostile aircraft showed little activity. In air fighting three German machines were shot down, and three were driven down out of control.

Three of our machines are missing.

No night-flying was possible on account of weather conditions.

Oct. 27th, 7.25 p.m.—On Oct. 26th a great deal of reconnaissance and photographic work was accomplished by our squadrons, and nearly eight

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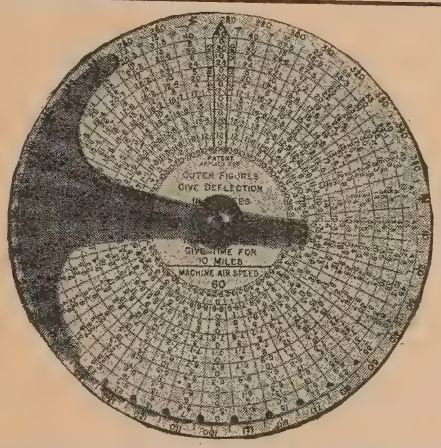
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and a half tons of bombs were dropped, important railway stations being attacked with excellent results.

The enemy's aircraft showed some activity over the northern battle front, and in air fighting eight of his machines were destroyed and three more were driven down out of control. Two enemy balloons were shot down in flames.

Nine of our machines are missing.

In spite of very unfavourable weather conditions, some of our night-flying machines succeeded in dropping over three tons of bombs on railway junctions and other targets in the enemy's lines of communications.

All these machines have returned.

Oct. 28th, 7.18 p.m.—On Oct. 27th our squadrons accomplished a great deal of reconnaissance and photographic work, and reported many targets to our artillery.

Enemy troops were attacked from the air with bombs and machine-gun fire, and our bombing squadrons dropped 12¼ tons of bombs on important railway stations and other targets.

The enemy's aircraft showed considerable activity, and there was a good deal of fighting. Sixteen enemy machines were shot down and destroyed, and 10 more were driven down out of control. Four German balloons were shot down in flames.

Eleven of our machines are missing.

War Office Communiqués.

Oct. 24th.—The G.O.C. in Italy reports:—

Bad weather has made flying difficult for the last 10 days, and there has been little air fighting. Two enemy balloons have been destroyed without loss to ourselves.

Oct. 25th.—The G.O.C. in Russia reports:—

On Oct. 23rd the enemy attacked the Allied position on the River Dvina after a six hours' artillery preparation. They were repulsed.

Allied aeroplanes with Russian pilots were a great assistance in these operations, and caused a panic among the enemy ships.

Oct. 25th.—The G.O.C. in Mesopotamia reports:—

In these operations (on Oct. 18th, advance near Fathah and at Tauk, on the main Mosul road) our aeroplanes have bombarded Turkish camps and have made numerous attacks on the retreating enemy.

Oct. 28th.—The G.O.C. in Italy reports:—

The operations yesterday (on the Piave) were greatly assisted by the work of the Royal Air Force, who, in addition to reporting the movements of our troops, attacked hostile formations with machine-guns from the air. Since my last report three enemy aircraft have been destroyed and seven driven down out of control. Four balloons have been destroyed.

Three of our machines are missing.

AIR FORCE.

Air Ministry Communiqués.

The following dispatches have been received from the Headquarters of the Independent Force, R.A.F.:—

Oct. 22nd.—On Oct 21st two squadrons made a successful attack on the barracks and railways at Metz, and, in spite of fog and clouds, all returned safely.

Another squadron set out to attack certain factories on the Rhine. When near the objective the formation ran into dense clouds and became split up.

At present seven machines are unlocated.

During the night of Oct. 21st-22nd a heavy and successful attack was made on the factories at Kaiserslautern. Many heavy bombs were dropped on the important stations at Mézières.

All our night-flying machines returned safely.

Oct. 23rd.—On the morning of the 23rd inst. the railways at Metz-Sablon were again subjected to heavy attacks by our squadrons. Many direct hits were obtained on the railway triangle and barracks.

In the course of attacks by enemy aeroplanes, one was destroyed and three were driven down out of control.

One of our machines is missing.

Oct. 24th.—On the night of the 23rd-24th our machines carried out heavy and successful attacks on the factories and railways at Burbach and Saarbrücken; over 5½ tons of bombs were dropped on these two objectives. The chemical factories at Mannheim, the railways at Coblenz and near Mainz, and the railways at Metz-Sablon were also attacked with good results.

At present one of our machines has not been located.

In addition to the enemy aircraft reported destroyed in yesterday's communique, one enemy aircraft was destroyed, falling on our side of the lines, and two more were shot down out of control.

Oct. 25th.—The machine previously reported unlocated in the report dated Oct. 24th has now been located.

Oct. 27th.—Our machines carried out heavy attacks on Frescaty aerodrome to-day. Bombs were observed to burst well on the target.

All our machines returned.

THE CASUALTY LIST.

MILITARY.

Reported Oct. 23rd.

Australian Force.—Accidentally Killed.—Wicks, Sec. Lt. G. V., F.C.

Wounded.—Kerr, Sec. Lt. H. N., F.C.

Canadian Forces.—Accidentally Killed.—Hopgood, Lt. E. W F., Que. Regt., attd. R.A.F.

Reported Oct. 24th.

Canadian Forces.—Previously reported Missing, now reported Prisoner in German Hands.—James, Lt. L. R., B. C. R., attd. R.A.F.

Reported Oct. 25th.

Australian Force.—Accidentally Killed.—Nicol, Lt. H., F.C.

Reported Oct. 26th.

Canadian Forces.—Killed.—Difford, Lt. W. M., Man. R., attd. R.A.F.

Previously reported Missing, now reported Prisoner in German Hands.—Kewley, Lt. B. H., Man. R., attd. R.A.F.

Reported Oct. 28th.

Australian Force.—Killed.—Butterworth, Lt. F. A., F.C.

Missing.—Cornish, Capt. E. W., M.C., F.C.; McKeown, Lt. J. A. H., F.C.

Canadian Forces.—Previously reported Missing, now reported Prisoners in German Hands.—Gross, Lt. C. E., Man. R., attd. R.A.F.

Helwig, Lt. N. W., Cent. Ont. R., attd. R.A.F.

Casualties among N.C.Os. and Men.

The Dates are those of the Official List.

Oct. 18th.—The following soldier who was a prisoner of war in Germany has arrived in Holland for internment:—

R.F.C.—Perry 8102 E. G.

Australian Imperial Force.

Previously reported Wounded, now reported Died of Wounds.

Oct. 19th.—F.C.—Rich 1285 M. B.

Wounded.

Oct. 16th.—Andrew 107 J.

AIR FORCE.

Reported Oct. 24th.

Killed.—Bailey, Sec. Lt. G. W.
Clarke, Sec. Lt. J.
Cram, Sec. Lt. J. M.
Marriott, Lt. K. M. H.
Tait, Sec. Lt. W. B.

Died of Wounds.—Sonnenberg, Lt. M. C.

Wounded.—Brown, Lt. L. H.; Clayton, Sec. Lt. J. G.; Gribben, Capt. E.; Hinde, Sec. Lt. P.; Hogg, Sec. Lt. A.; Kerr, Sec. Lt. C. W.; McAdam, Lt. J. L.; Phillips, Sec. Lt. V. G. H.; Taylor, Sec. Lt. A. F.; Wilson, Sec. Lt. L. T.

Missing.—Winthrop-Andrews, Lt. J.; Awde, Lt. I. W.; Beck, Lt. T., M.C.; Bond, Lt. F. E.; Bucknall, Sec. Lt. C. V. A.; Davison, Lt. C. W.; Le Lievre, Sec. Lt. F. L.; Whitman, Sec. Lt. T.; Young, Lt. L.

Prisoner of War.—Riley, Sec. Lt. E. I.

Previously reported Missing, now reported Prisoners of War.—Anderson, Lt. J. D.; Beauchamp, Lt. F. E.; Blake, Sec. Lt. A. G. S.; Bullen, Lt. E. H.; Clark, Lt. C. G.; Elliott, Sec. Lt. H.; Gorman, Lt. G. W.; McConnell-Wood, Lt. A.; Partridge, Lt. A. T.

Previously reported Missing, now reported Missing, believed Prisoner of War.—Lewis Lt. W. T. S.; Luard, Sec. Lt. R. B.; O'Shea, Lt. H. A.

Reported Oct. 25th.

Killed.—Smith, Sec. Lt. J. E.
Kemp, Sec. Lt. R. H.
Jenkins, Sec. Lt. A. E.
Henry, Sec. Lt. J. A. G.
Wogan-Browne, Sec. Lt. C. P.

Previously reported Missing, now reported Killed.—Montgomery, Lt. J. R.

Wounded.—Cope, Sec. Lt. C. S.; Dalgleish, Sec. Lt. N. J.; Glidewell, Sec. Lt. C. N.; Irving, Sec. Lt. J. L.; Johnston, Sec. Lt. A. G.; Kirkby, Sec. Lt. K. T.; Nichol, Capt. E. F., M.C.; Palmer, Sec. Lt. C. R.

Missing.—Calrow, Lt. R.; Cairns, Sec. Lt. W. T. J.; Freer, Sec. Lt. W.; Hancock, Sec. Lt. C.; Jones, Sec. Lt. L. S. R.; Judkins, Sec. Lt. O. V.; Neil, Sec. Lt. J. W.; Perring, Sec. Lt. J. H.; Prime, Sec. Lt. H. L.; Warner), Lt. J. W.

Previously reported Missing, now reported Missing, believed Prisoners of War.—Crookell, Sec. Lt. S. E.; Dunlop, Sec. Lt. J. M.; Ingram, Capt. R. S. S.; Latimer, Capt. D., M.C.; Loudoun, Capt. L. G.; Porter, Sec. Lt. A. C.; Stephens, Sec. Lt. C. H.; Venter, Capt. C. J.

Previously reported Missing, now reported Prisoners of War.—Ritchie, Sec. Lt. T. M.; Tison, Sec. Lt. M.

Previously reported Missing, now reported Wounded and Prisoner of War.—Pollard, Lt. W. H.

Reported Oct. 26th.

Killed.—Brown, Sec. Lt. C. V. R.
Chadwick, Sec. Lt. F. W.
Daunt, Sec. Lt. C. O'N.
Mitchell, Sec. Lt. L. E.

Died of Wounds.—Fletcher, Sec. Lt. C.
Gardner, Capt. C. V.

Wounded.—Anderson, Sec. Lt. A. M.; Beauchamp-Proctor, Capt. A. W., D.S.O., D.F.C., M.C.; Browne, Capt. R. F.; Haviland, Sec. Lt. W.; Hey, Sec. Lt. M. W. R.; Shaw, Sec. Lt. H. B.; Shires, Sec. Lt. H. C.; Smith, Lt. G. W. K.; Walsh, Sec. Lt. F. J.; Wood, Lt. G. O.

Missing.—Ely, Lt. F. W.; Lackey, Sec. Lt. H. D.; McBride, Sec. Lt. J. G.; Murphy, Lt. J. P.

Previously reported Missing, now reported Wounded and Prisoner of War.—Struben, Lt. H. M.

Previously reported Missing, now reported Prisoners of War.—Coulson, Sec. Lt. W. E.; Henderson, Sec. Lt. W. R.; Labatt, Sec. Lt. W. H. E.; Sommerfelt, Sec. Lt. A.

Previously reported Missing, now reported Missing, believed Prisoners of War.—Benjamin, Lt. A. L.; Carpenter, Lt. F.; Miller, Sec. Lt. A. M.; Pearson, Sec. Lt. B. C.

Reported Oct. 28th.

Killed.—Fenton, Lt. J. A.
Martin, Sec. Lt. H. L.
Reid, Sec. Lt. F. R.

Died of Wounds.—Kelly, Sec. Lt. T. W.
Willes, Lt. P. D.

Wounded.—Anderson, Sec. Lt. J.; Atkins, Sec. Lt. F. I.; Boon, Sec. Lt. W. J.; Fullagar, Sec. Lt. R. G.; May, Sec. Lt. C. J. H.; Rennie, Sec. Lt. J. McP.

Missing.—Bodley, Sec. Lt. W. G. L.; Brandrick, Sec. Lt. A.; Bryant, Lt. J. H. R.; Courtenay, Sec. Lt. W. J.; Davies, Sec. Lt. D. P.; Eyre, Sec. Lt. H. C.; Inglis, Capt. A. G.; Latimer, Lt. A.; Leighton, Sec. Lt. G. R.; Speagell, Sec. Lt. H. M. D.; Towler, Sec. Lt. F. S.

Previously reported Missing, now reported Prisoners of War.—Caryeth, Lt. W. A.; Conlan, Sec. Lt. T.; Coombes, Sec. Lt. E. S.; Harrison, Lt. A. H.; Hemmens, Lt. R. H.; Rose, Lt. G.; Tratman, Lt. L. W. D.

Previous reported Missing, now reported Missing, believed Prisoners of War.—Preston, Sec. Lt. A.; Scrivener, Sec. Lt. H. A.

Reported on Oct. 29th.

Killed.—Aizlewood, Maj. L. P.
Lamburn, Lt. G. A.
Stata, Lt. B. H.
Symons, Capt. T. S., D.F.C.
Tong, Sec. Lt. A. F.

Died of Wounds.—Lucas, Lt. H. W. H.

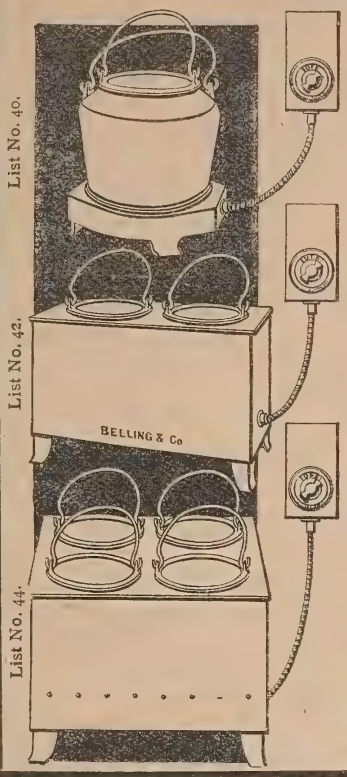
Wounded.—Bain, Sec. Lt. N. H.; Ballantyne, Sec. Lt. G. A.; Collyns, Sec. Lt. C. H. A.; Dinwoodie, Capt. H., M.C.; Graham, Sec. Lt. J.; Green, Sec. Lt. W. C.; Lloyd, Sec. Lt. S. T. R.; MacAndrew, Lt. J. O.; O'Callaghan, Lt. M. A.; Trubshawe, Sec. Lt. W. V.; Wilby, Sec. Lt. E. E.

Missing.—Bardgett, Lt. W. E.; Cornwell, Sec. Lt. F.; Houlgrave, Sec. Lt. C.; Poe, Sec. Lt. J. M.; Smyman, Sec. Lt. G. D. L.; Thompson, Sec. Lt. W. M.; Thomson, Sec. Lt. J. H.; Webb, Lt. D. E.

Missing, believed Drowned.—Waterson, Sec. Lt. J. M.

Previously reported Missing, now reported Prisoners of War.—Ashton, Sec. Lt. K. H.; Bayliss, Lt. W. M. F.; Bosher, Lt. H.; Crickmore, Lt. E. B.; Laurie, Sec. Lt. K. S.; Lewis, Lt. A.; Scadding, Sec. Lt. E.; Singleton, Sec. Lt. E.; White, Lt. R. E.; Wignall, Sec. Lt. G.

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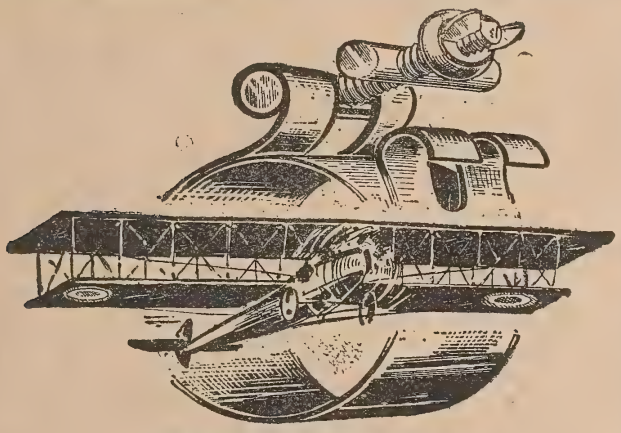
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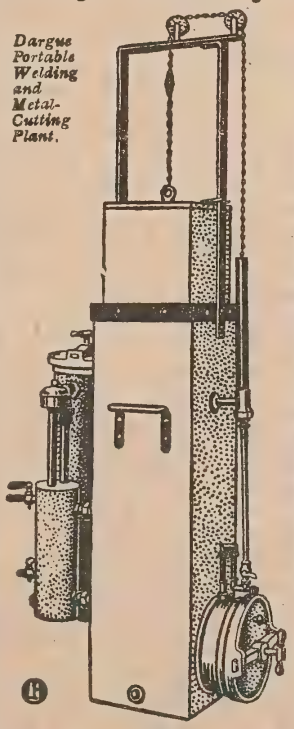
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Reported Oct. 30th.

KILLED.—Millington, P.F.O. C. B.
Monk, Sec. Lt. H. I. M.
Peel, Lt. W. S., M.C.
Woodhouse, Capt. L. M., M.C., D.F.C.
Wright, Sec. Lt. W. M.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED WOUNDED.—Parkinson, Lt. G. R. J. (late R.N.A.S.)

WOUNDED.—Archer, Lt. W. D.; Barley, Sec Lt. F. A.; Carter, Sec. Lt. B. M.; Clarke, Sec. Lt. R. A.; Cross, Capt. A. R., D.F.C.; Jones, Sec. Lt. F. S.; McDougall, Sec. Lt. N. M.; Payne, Sec. Lt. R. W.; Perrins, Sec. Lt. C. T.; Stone, Sec. Lt. S. St. C.

MISSING.—Campbell, Capt. L.; Fox, Lt. D. S.; Hodgkinson, Sec Lt. W.; Sitch, Lt. J. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Black, Lt. S. McB.; Bradford, Sec. Lt. W. W.; Garrity, Lt. W. J.; Meyer, Sec. Lt. O. F.; Parke, Sec. Lt. J. E.; Stephenson, Sec. Lt. G. H.; Wyncoll, Sec. Lt. A. W.

INTERNED.—Brodie, Sec. Lt. T. W.
John, Sec. Lt. D. M.
Lockey, Sec. Lt. B.
Stockman, Lt. J. C.

PERSONAL NOTICES.

NAVAL.

DEATH.

BARNATO.—The death from pneumonia following on influenza of Capt. Jack Barnato, R.A.F., eldest son of the late B. I. Barnato, occurred suddenly on Oct. 26th after a few days' illness, at Duke Street Mansions, Grosvenor Square. Capt. Barnato, who was 24 years of age, was one of the four naval aviators who in the early days of the war bombed Constantinople. He only recently celebrated the first anniversary of his marriage to Miss D. Lewis.

BROUGHTON-ADDERLEY.—Capt. Peter Handcock Broughton-Adderley, S.G., who died on Oct. 16th, of wounds received while commanding his company in action on the previous day, was the eldest son of Mr. and the Hon. Mrs. Hubert Broughton-Adderley, of Tunstall Hall, Market Drayton, and Barlaston Hall, Staffordshire. He was educated at the Rev. E. L. Browne's, St. Andrew's, Eastbourne, Eton (Mr. Stones), and Exeter College, Oxford. After leaving Oxford he went out to Rhodesia to take up tobacco farming, but after nine months contracted blackwater fever and sunstroke and had to return to England. In 1914 he went to Canada, and on the outbreak of war tried to enlist, but could not get passed for active service. In September he joined the Royal North-West Mounted Police at Prince Albert, and served with that force for two years. He then joined the R.N.A.S. at Toronto, and went to France in February, 1917, to complete his training, but owing to a bad crash had to give up flying. He transferred to the Scots Guards, went to the front with them in December, 1917, and obtained the acting rank of Captain last September. He was a good all-round sportsman and cricketer, and at Eton obtained his Upper Sexpenny, Lower Club, and XXII., and his house colours, and was a member of the Eton Society. At Oxford he played cricket for his college and for the Authentics, and was a member of the Bullingdon Club. He was also a member of the M.C.C.

MILITARY.

DEATHS.

BARWELL.—Capt. Hugh William Eames Barwell, M.C., R.F.C., was reported missing on Mar. 25th last, and in a letter lately received by his father, Mr. William Barwell, of 26, George Road, Edgbaston, the War Office informed him that his son is now presumed to have been killed on or after that date. The C.O. of his squadron wrote:—"I had only the previous day recommended him for a bar to his M.C. . . ." Capt. Barwell was awarded the M.C. and the Croix de Guerre for conspicuous gallantry and good service at Beaumont Hamel in November, 1916. He was 25 years of age, and was educated at West House School, Edgbaston, Oundle, and Birmingham University, where he took the degree of B.Sc. just before the outbreak of war. He joined at once, and was given his commission in the 11th Royal Warwick Regt., and served two years in France, being promoted captain in December, 1915. In July, 1917, he was transferred to the R.F.C.

BROMLEY.—Lt. John Ledger Bromley, M.T., attd. R.A.F., who was killed whilst flying over the enemy lines on Sept. 29th, was the elder surviving son of Mrs. Bromley, Craigmoor, Rhyl. He was 21 years of age.

DOUGLAS.—Capt. Brian Charles O'Driscoll Douglas, Connaught Rangers and R.F.C., who was killed on Oct. 21st, was the only son of Mr. and Mrs. James Douglas, of 96, Inverness Terrace, W. While flying in West Middlesex at the height of about 1,000 ft. he looped the loop, but the machine failed to come out of the loop and crashed. He was an accomplished aviator and had had considerable experience in France. He was 24 years of age.

FLOWERS.—Capt. Humphry French Flowers, R.A.F., younger son of the Rev. J. F. Flowers, of Great Carlton, Louth, Lincolnshire, was killed on Oct. 14th, aged 22. He was educated at Stancliffe Hall and Trent College, Derbyshire, and was given a commission in the R.F.A. from the Inns of Court, in August, 1915. He served with his battery in the Somme battle. He transferred to the Royal Flying Corps in April, 1917, working first as an observer and later as a pilot. He was appointed flight commander a few weeks before his death. He was shot down "while putting up a splendid fight against a strong formation of German scouts which suddenly appeared out of the mist."

GOTCH.—Lt. Geoffrey William Gotch, of the R.G.A., attd. R.A.F., died on Oct. 22nd. He was 22 years of age, and had formerly served with the 1st Batt. H.A.C. (Infantry).

HALL.—Sec. Lt. Sydney Hall, R.A.F. (late Manchesters), who was killed in action on Oct. 18th, was the son of Mr. and Mrs. R. Hall, of Quarryton, Hayne Road, Beckenham, Kent, and husband of Nellie Hall. He was 28 years of age.

HAZELL.—Lt. Dudley H. Hazell, The King's Own Royal Lancaster, attd. R.A.F., who was previously reported missing on Sept. 27th, is now reported dead. He was the son of Mr. and Mrs. Fredk. Hazell, Frinton-on-Sea. He was 23 years of age.

HOWARD.—Maj. Guy R. Howard, D.S.O., Essex Regt., attd. R.A.F., who died on Oct. 24th at a casualty clearing station, was the younger son of Col. and Mrs. W. Howard, of East Lodge, Bexhill-on-Sea.

L'ESTRANGE.—The death is announced in New York of Mr. Julian L'Estrange from pneumonia. Mr. L'Estrange, who was a great-nephew of Lord Edward Fitzgerald, the Irish revolutionist, had transferred to the R.F.C. from the Canadian contingent. Before the war he was a familiar figure on the English stage. In 1905 he married Miss Constance Collier, the famous actress.

SAMSON.—Sec. Lt. Philip Edward Samson, King's Liverpool Regt., who died of wounds received in action on Oct. 21st, was the youngest son of Mr. Charles L. Samson, of 121, Ashley Gardens, S.W.

Mr. Samson, who was well known to the members of the Royal Aero Club, was a brother of Col. C. R. Samson, D.S.O., R.A.F. (late Wing Commander, R.N.A.S.), and this year married Miss Ruby Miller, the popular actress.

UPFILL.—Lt. Thomas Henry Upfill, M.C., R.F.A., attd. R.A.F., who was killed in action on Oct. 18th, was the only son of Mr. and Mrs. Upfill, of 88a, Cromwell Road.

WHITEHEAD.—Lt. George William Edendale Whitehead, R.F.A., attd. R.A.F., was the younger son of Sir George and Lady Whitehead, of Wilmington Hall, near Dartford, and grandson of the late Sir James Whitehead, Bt., and the late Sir William Ascroft. Born in 1895, he was educated at Cordwalles, Maidenhead, and at Clifton College, where he held two scholarships, represented the school at fives, was in the football fifteen for two years, and in the cricket eleven for four years (capt. in 1913 and 1914). He held several Clifton records for cricket. For three years he represented the Public Schools against the M.C.C. at Lord's, and in 1914 played twice for the Kent first eleven. He was entered at Trinity College, Oxford, but on the outbreak of war decided to enter the Army. He passed high into Woolwich, being top of 600 candidates both in English and in Latin. At Woolwich he was elected captain of cricket, and scored freely on several occasions. He received his commission in the R.F.A. on July 28th, 1915, going to the front five weeks later, just in time for the battle of Loos, afterwards spending a winter on the Ypres salient, and taking part in the battle of the Somme in July, 1916. After a severe illness and operation, which kept him inactive for twelve months, he refused a position in this country, and succeeded in transferring to the Royal Flying Corps, becoming a pilot in due course. At the time of his death he was on artillery patrol, and was brought down near the enemy's lines, both he and his observer being killed.

BIRTHS.

BIRD.—On Oct. 21st, at 25, Campden Hill Square, W., the wife of Capt. A. Gordon Bird, London Regt., attd. R.A.F.—a daughter.

MURRAY.—On Oct. 19th, at Stray Lea, Harrowgate, Gwladys Vivienne (*née* Woodruff), the wife of Lt.-Col. E. M. Murray, M.C., Q.V.O. Corps of Guides, and R.A.F.—a daughter.

* * *

Sec. Lt. K. P. Barford, R.F.C., has been missing since March 27th, 1918, from the Somme front. Information regarding him will be gratefully received by Mr. H. W. Barford, Earlsdon, Coventry.

AIR FORCE.

DEATHS.

BURTON.—Wireless Operator Leonard Burton, R.A.F., who died on Oct. 22nd at the Blandford R.A.F. Military Hospital of pneumonia, following influenza, was the son of the late A. T. W. Burton and Mrs. Burton, 23, Atherfold Road, Clapham. He was seventeen years of age.

CARTER.—Harold Carter, R.A.F., who died on Oct. 27th as the result of an accident whilst flying at Doncaster, was the youngest son of Mr. and Mrs. Ben Carter, 161, Maida Vale, W.9. He was 18 years of age.

COLE and KEATES.—Lt. W. T. Cole, R.A.F., and 1st Air Mech. H. Keates were killed recently while flying in South Essex. The aeroplane they were flying nose-dived and crashed Mr. Cole's home is at Shaftesbury, Dorset, and Air Mech. Keates lived at West Wood Grove, Leek, Staffs.

COWPER-COLES.—Lt. Sherard William Cowper-Coles, Actg. Flt. Comdr., R.A.F., who was killed in action on October 14th, was the eldest son of William Burgoyne Cowper-Coles. He was 22 years of age.

HALE.—Sec. Lt. Philip Roderick Hale, R.A.F., who was accidentally killed while flying in Scotland on Oct. 16th, aged 19, was the younger son of Mr. and Mrs. Cecil T. Hale, of Kingston Hill, Surrey.

HARDY.—Sec. Lt. Jack Hardy, R.A.F., who died suddenly on October 21st from acute pneumonia, following influenza, whilst on active service, was the husband of Frances E. Cunliffe Hardy (*née* Goodall), of Beechwood, Orpington, Kent. He was 28 years of age.

HILL.—Lt. Aubrey Charles Finch Hill, R.A.F., who died of pneumonia while on active service on October 24th, was the husband of Elizabeth A. Hill, of Streatham (proprietress, F. Foxley and Co., Bayswater), and third son of the late Joseph Hill, of Streatham Hill. He was 43 years of age.

LLOYD.—Sec. Lt. Robert Aubrey Hastings Lloyd, R.A.F., whose death was announced last week, was born on Oct. 26th, 1899. He was educated at Hartford House School, Eagle House School, and at Rugby, where in the autumn of 1916 he gained his colours for the school football XV. He left Rugby in April, 1917, and went into an aircraft factory, where he worked until he reached the age when he could be admitted to the Royal Air Force. He obtained his wings at the earliest possible date and was passed as a fighting scout pilot, going to the front last July. On Oct. 10th he was mortally wounded while flying some miles over enemy lines, but managed to get back to the British lines. He died at a casualty station four days afterwards. The commanding officer of his squadron writes:—"He had already shot down one enemy machine in flames entirely unaided, and destroyed one other. . . . He apparently found some Huns retreating along a road, and was so keen on destroying them that he came down a bit too low and was hit from the ground. Apparently he put up a wonderful show, flying over sixteen miles with a very severe abdominal wound. How he managed to do it no one can understand."

LOXLEY.—Capt. Reginald Victor Byron Loxley, R.A.F., who died of pneumonia on Oct. 18th, was the youngest son of the late Rev. Arthur S. Loxley and Mrs. Loxley, The Little Cloisters, Gloucester. He was 31 years of age.

MILLARD.—Flt. Cadet Spencer Harold Millard, R.A.F., accidentally killed while flying in Hants on Oct. 17th, was the second son of the Rev. F. L. H. Millard, vicar of St. Aidan's, Carlisle, and grandson of the late Chancellor Ferguson, M.A., F.S.A. He was 18½ years of age.

MUMFORD.—Sec. Lt. Louis Richard Mumford, R.A.F., who died on October 21st at the Military Hospital, Belton Park, Grantham, after a brief illness, was the third son of Stewart T. and Grace A. Mumford. He was 27 years of age.

SOULBY.—Lt. Herbert Westgarth Soulby, R.A.F., who was accidentally killed on Oct. 19th in an aeroplane accident, was the elder son of Mr. and Mrs. H. W. Soulby, of 39, Ellesmere Road, Chiswick.

WALL.—Henry Norman Wall, R.A.F., who died suddenly on October 17th of pneumonia, was the husband of Dorothy Wall (*née* German), and son of Mrs. W. H. Wall, of Upper Tooting.

Engagements.

AINSLIE—CHARLESWORTH.—An engagement is announced between Maj. Eustace M. L. Ainslie, R.A.F., second son of Mr. W. L. Ainslie, of Haworth House, Harrow Weald, and Audrey, daughter of the late J. Charlesworth, of Loft House Park, Wakefield, and Glen App Castle, Scotland, and Mrs. Hellins, of Marnhull Rectory, Dorset.

BENNING—PATTINSON.—An engagement is announced between Maj. Brian Stuart Benning, R.A.F., third son of Mr. and Mrs. Chrichton S. Benning, The Limes, Dunstable, to Frieda, only daughter of Mr. and Mrs. John Pattinson of Heckington, Lincs.

Marriages.

JUDD—PLATTS.—On Oct. 24th, 1918, at St. Bartholomew's, Sydenham, Lt. Kenneth Eric Judd, R.A.F., youngest son of G. W. Judd, I.S.O., Karachi, was married to May Henrietta, second daughter of Henry Charles Platts, A.M.I.C.E., and Mrs. Platts, of Hazelwood, Sydenham.

MANSFIELD—McGAVIN.—On Oct. 24th, at St. Marylebone Parish Church, Capt. John Alfred Mansfield, R.A.F., son of the late John Mansfield, Esq., of Stonehouse, Gloucestershire, and Mrs. Bryan, of King Hill, West Malling, Kent, was married to Kathleen Margaret, daughter of Lawrie McGavin, F.R.C.S.Eng. (late 6th Dragoon Guards, the Carabiniers), and Mrs. McGavin, of 32, Weymouth Street, W., and Morton Bagot Manor, Studley, by the Rev. S. Peshall, rector of Spernall, Warwickshire, assisted by the Rev. W. D. Morrison, D.D., rector of St. Marylebone Parish Church.

REISS—WHITEHURST.—The marriage of Mr. Peter Quentin Reiss, R.A.F., second son of Mr. and Mrs. Henry Reiss, of Holmes Chapel, Cheshire, and Miss Vivian Whitehurst, younger daughter of the Rev. and Mrs. Baron Whitehurst, of Farnborough, Berkshire, was solemnised on Oct. 23rd at St. Peter's Church, Eaton Square. The bride was given away by her father, and was attended by four bridesmaids, Miss Vere Whitehurst, Miss Nancy Reiss, Miss Doreen Bagge, and Miss Nancy Bagge. Capt. John Hanbury-Williams, cousin of the bridegroom, was best man. The Rev. Austin Thompson, the vicar, officiated.

RUNDLE-WOOLCOCK—BECKS.—The marriage was solemnised at the Central Wesleyan Church, Eastbourne, on Oct. 17th, of Lt. Derick Terrill Cleave Rundle-Woolcock, R.A.F., and Miss Grace Ernestine Becks, W.R.A.F., daughter of Dr. and Mrs. Simms, of Coventry Road, Birmingham. The bridegroom is the son of the late T. Cleave Woolcock and Mrs. E. C. Rundle-Woolcock, of "The Toll," Horeham Road, and Lomangundi, Rhodesia.

The ceremony was performed by an old family friend of the bridegroom—Brig.-Gen. the Rev. J. H. Bateson, who was assisted by the pastor of the church, the Rev. E. C. Lansdown. The bride was given away by her father.

Among the many guests present and invited were Gen. Sir Leslie Rundle, D.S.O., and Lady Rundle, Maj.-Gen. Fry, Brig.-Gen. the Rev. J. H. Benson, Col. Winn, Col. Richardson, Majs. Hodder, Ralli-Johnson, Molchery, Morgan, and Capt. Woollett, D.S.O., M.C.

After the reception the bride and bridegroom left for Brighton.

Births.

BAKER.—On Oct. 23rd, at The Rosary, Ashford, Kent, the wife of Capt. P. D. Baker, R.A.F.—a son.

DARRELL SEAL.—On Oct. 20th, at "Highbury," Wantage, Berks, to Phyllis, wife of Capt. J. Darrell Seal, R.A.F.—a son.

DAVIDSON.—On Oct. 23rd, at Clare Lodge, Stamford, Lincs, the wife of Maj. Eardley Davidson, R.A.F.—a son.

FROST.—On October 17th, at Old College House, Lichfield, to Maj. G. Frost, R.A.F., and Mrs. Frost (Violet *née* Andrews)—a daughter.

HAMMOND.—On Oct. 21st, at Ivy Nook, Botolph Claydon, Winslow, Bucks, to Emmie, wife of Capt. H. O. P. Hammond, R.A.F.—a son.

TRUTCH.—On Oct. 27th, at Streatham Manor, the wife of Capt. C. J. Hyde Trutch, R.A.F.—a son.

WINWOOD SMITH.—On Oct. 27th, at 32, Wilton Crescent, Wimbledon, to Muriel (*née* Garside), wife of Lt. C. W. Winwood Smith, R.A.F.—a daughter.

* * *

Sec. Lt. F. H. A. Weale, R.A.F., B.E.F., was reported missing Oct. 2nd, 1918, together with his observer, Sec. Lt. Ellis Preece, after engagement over enemy lines. Will anyone who can give any information as to either or both of the above officers please communicate with A. C. Morey Weale, "Ellcote," Totteridge, Herts?

FOREIGN COMMUNIQUES.

FRANCE.

Oct. 21st.—Despite the unfavourable weather in the region west of the front and in Flanders on Oct. 21st our observation machines carried out important reconnaissance work behind the enemy's lines. Two enemy aeroplanes were brought down and one balloon set on fire. Taking advantage of a fine spell, our bombing machines dropped 18,800 kgs. of bombs on important ammunition dumps, and, in particular, on the stations of Longuyon, Stenay, Hirson, Vervin, Marles, Moncornet, Rosoy sur Serre, Previsy sur Serre, and Liart. A number of hits were observed, and, in consequence, many fires were started.

Oct. 22nd.—On Oct. 21st, in spite of very unfavourable weather, in the western region of the front and in Flanders our observation crews did important reconnoitring and watching work behind the enemy front. Two enemy aeroplanes were brought down and a balloon was set on fire.

Taking advantage of a short spell of clear weather at the beginning of the night, our bombers dropped nearly 19 tons of projectiles on big railway junctions, particularly on the stations of Longuyon, Stenay,

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Hirson, Vervin, Marles, Montcornet, Rosoy-sur-Serre, Prévisy-sur-Serre, and Liart. A large number of direct hits were observed, which caused fires in the stations of Longuyon, Hirson, and Rosoy-sur-Serre.

Oct. 23rd.—On the 22nd the thick mist and rain once more hampered the work of our aviators. Our observation machines, protected by our chaser aeroplanes, were nevertheless enabled to carry out their usual reconnoitring work in the enemy back areas. During these operations three enemy aeroplanes were brought down and two captive balloons were set on fire.

During the night, in spite of the mist, which continued to be thick, our bombarders dropped over seven tons of projectiles on the railway stations of Liart, Hirson, Provisy, and Le Chesne. Our fire caused a conflagration in Liart station.

Oct. 24th.—On Oct. 23rd, the weather having improved, our aviators were able to do a considerable amount of work. The observation machines, in the course of numerous reconnaissances, some of which were pushed to a distance of over 70 kilometres (43 miles) behind the enemy lines, brought back several hundreds of photographs.

Two captive balloons were set on fire, and 12 enemy aeroplanes were brought down or put out of action. The majority of these successes were attained in the region of the Aisne, where our chasers were particularly vigilant.

During the night our bombers went up in spite of particularly unfavourable atmospheric conditions. They dropped 14,500 kilograms (about 14 tons) of projectiles on the railway stations of Montcornet, Marles, Vervins, and Wassigny, and especially on the station of Provisy, where over seven tons of explosives were dropped, causing several fires.

Oct. 26th.—During the 25th, despite dense fog and rain, our Air Service lent our troops effective support.

During the battle on the front of the Fifth Army, while the chaser patrols, flying over the battlefield at a height of from 100 to 200 metres, were assuring the security of the air, our observation machines, flying still lower, were machine-gunning enemy troops, convoys and batteries, supporting the Tank attacks, regulating the fire of our artillery, and marking the advance of the infantry. One machine directed our artillery fire from a height of 120 ft. Another aviator carried out, at a height of about 900 ft., a reconnaissance five miles behind the enemy's lines, and was able to signal that important German reinforcements were arriving in motor lorries in the region of St. Fargeux. They were at once caught under the fire of our guns.

Oct. 27th.—The improvement in the weather has made possible active aerial operations on the front of the First Army. Our pursuit squadron engaged the enemy in many combats, in the course of which 13 enemy aeroplanes and five of our machines were shot down. Our bombing units dropped three and one half tons of explosives on Briqueany.

Oct. 28th.—The work of our aviation service was continued to-day very actively, although dense fog rendered its task particularly difficult. Our observation machines effected numerous reconnaissances on the whole of the region behind the enemy's front and brought back valuable information for the Command and numerous photographs. They have particularly reported fires in the greater part of the localities on the right bank of the Aisne, which is still in the enemy's hands, as well as in the valley of the Serre between Marle and Moncornet. Our bombers, protected by fighting machines, carried out, with an audacity which had its full effect, several expeditions in the region of Seraincourt. This village, at the junction of several roads, has played an important rôle in supplying the enemy in the battle waged by the Fifth Army between Sissonne and Château Porcien.

One hundred and twenty bombing and 80 chaser aeroplanes undertook in successive groups an attack on the objectives designated, notably supply convoys, munition depots, and encampments in the region, as well as on troops which had been signalled in the ravine south of Seraincourt. Thirty-three tons of bombs and 15,000 bullets were fired, causing serious losses to the enemy and great disorder in his ranks, and at certain points the complete stoppage of traffic. In addition several fires and the explosion of a munitions depot were observed.

In the course of the day's operations nine hostile aeroplanes were brought down and a captive balloon was set on fire.

The fog, which became absolutely dense, completely stopped work during the night. Sous-Lt. Marinovitch brought down his 20th machine and Sgt.-Maj. Mace his 10th.

ITALY.

Oct. 23rd.—Our aviators effectively bombarded trains and hutments in the railway station of Casarsa and various military objectives in the back areas of the Asiago Plateau. One machine dropped 300 kilogrammes (about 6 cwt.) of bombs on the arsenal of Pola. Two hostile aeroplanes and a captive balloon were brought down in air fighting; a third machine, hit by anti-aircraft batteries, came down in flames.

Despite bad weather conditions in ——, maritime coast traffic was efficiently protected by naval aviation, which also supplied useful information regarding enemy positions and movements both by land and sea. An enemy submarine was successfully bombarded at low altitude and is considered sunk.

Oct. 24th.—Our air flights bombarded with visible effects enemy hutments in the area of Fonzaso and large depots in the neighbourhood of the station of Sacile.

Oct. 25th.—Adverse atmospheric conditions completely hindered aerial activity on Oct. 24th.

[This is in reference to the new Italian offensive.—Ed.]

Oct. 26th.—Flights of aeroplanes operating in successive squadrons violently bombarded with excellent results enemy hutments, parks, and depots, bombed and dispersed columns of troops and transport in Sugana Valley, Cismon Valley, and in the Arten Basin, dropping altogether about 7,000 kilog. of bombs. Two thousand kilog. more were dropped last night by airships of the Royal Army on railway plants in the enemy's lines of communication. Two hostile machines were brought down.

Albania.—Aerial reconnaissances report numerous fires at S. Giovanni di Medua.

Oct. 27th.—Our own and Allied aircraft showed much activity, carrying out powerful bombardment actions in the enemy's lines of communication and machine-gunning repeatedly troops in position and on the march. Ten hostile aeroplanes were brought down in air combats. On the railway station of Levico, surprised in full activity, 400 kilogrammes of bombs were dropped last night by one of our airships.

Oct. 28th.—Italian and Allied aircraft contributed with extreme daring in the battle on the Piave. Very effective bombardment actions with more than 10,000 kilos (over 10 tons) of explosives carried out in the enemy's lines of communication, and enemy troops were attacked at a low elevation with machine-gun fire. Eleven hostile machines and three captive balloons were brought down in air fighting. Lt.-Col. Piccio reached his 24th victory.

GERMANY.

Oct. 22nd.—Four aeroplanes were shot down out of a squadron of about seven enemy aeroplanes which attacked places in the valley of the Lahn. Lt. Veltjens obtained his 35th aerial victory.

Oct. 23rd.—Lt. Buechner obtained his 40th aerial victory.

U.S.A.

Oct. 23rd.—The day has been marked by increased aerial activity on both sides of the Meuse. In the course of many combats our pursuit squadrons shot down 15 enemy aeroplanes and one observation balloon. Three of our observation balloons were destroyed and six of our machines are missing. Our bombing units dropped five tons of explosives on enemy concentration points.

Oct. 27th.—Our pursuit squadrons engaged the enemy in many combats, in which 13 enemy aeroplanes and five of our machines were shot down. Our bombing units dropped three and a half tons of explosives.

Oct. 28th.—In spite of poor weather conditions, our aviators were again active on the front of the First Army, and shot down three enemy aeroplanes, and one observation balloon.

All of our machines returned.

BELGIUM.

Oct. 21st.—During the night of Oct. 19th-20th an enemy aeroplane was brought down by our anti-aircraft defences

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[As the R.A.F. is not allowed to wear chevrons, are its unfortunately deprived members eligible for the Chevrons Club?—Ed.]

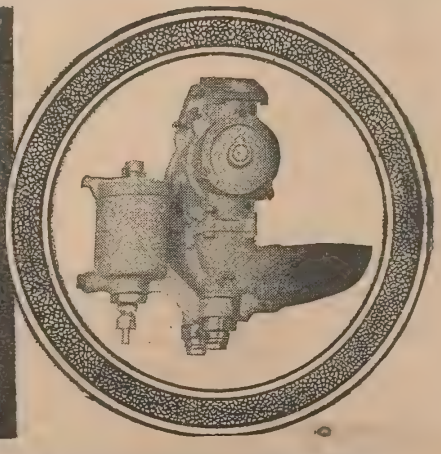
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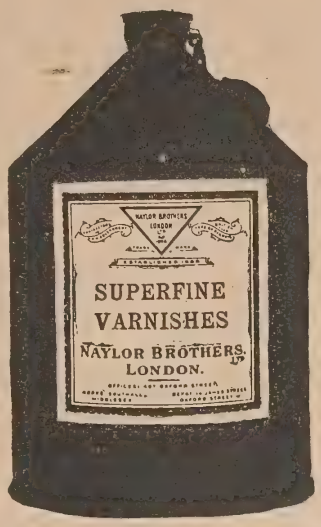
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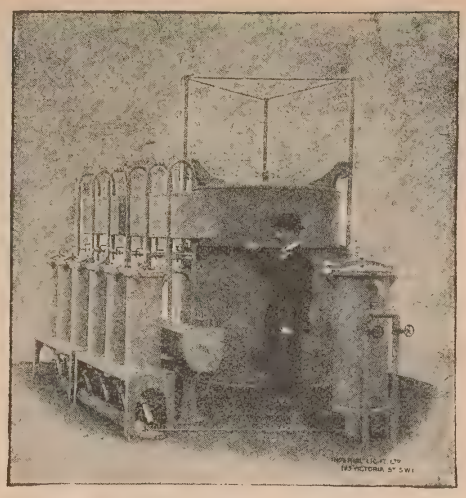
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THE WAR IN THE AIR.

The official figures of air-fighting during the past week are very remarkable and instructive.

They show that it is possible for the Royal Air Force to have a particularly successful week, in which work of the utmost importance and military value is accomplished despite the fact that remarkably little actual air-fighting has taken place.

Surprising as this will seem to the unprofessional observer, the total number of German and British machines reported down during the first six days of the week was only 17, notwithstanding the fact that heavy land fighting was in progress on a wide front throughout the period. Of these, three German machines were destroyed and five driven down out of control. During the whole week, 16 enemy machines were destroyed and five driven down out of control. 19 British machines were reported missing.

This strikingly low toll of machines was due in part to the prevalence of fog and rain over considerable portions of Northern France and Flanders. It was chiefly due, however, to the inactivity of the enemy, whose aviators were little in evidence, notwithstanding the abundant provocation offered by the British bombing and reconnaissance machines throughout the battle.

Prior to the dramatic events of Thursday, the 16th instant, when Royal Air Force contingents landed in Ostend and reported it to be clear of the enemy, British aerial activity had centred chiefly in the rapidly deepening salient between Dixmude and Wervicq. With the fall of Lille and Douai, and the enforced German evacuation of the Belgian coast, operations rapidly extended along the whole front from Zeebrugge, which fell on Saturday, to the Le Cateau Salient, where British and American troops were fighting their way forward against heavy resistance. British pilots and observers, using their machine-guns from a low height with great effect, co-operated in the capture of Solesmes, and in the hotly contested British advance along the Scheldt to the suburbs of Valenciennes.

The advance of British troops between Valenciennes and Le Cateau was greatly assisted by the activities of British fighting scouts, which did not hesitate to fly at very low altitudes, pouring a heavy fire into the enemy columns and transport upon the roads leading to the north-east. British aviators subsequently co-operated in the brilliant advance resulting in the clearing of Raismes Forest.

R.N.A.F.

In the meantime, British squadrons, were actively engaged in following up the retreating enemy in the north Very valuable aid to the Allied troops operating in Belgium was rendered by British Coastal Squadrons, which vigorously attacked the railway junction at Moerkerke, north-west of Bruges, the Zeebrugge-Ghent Canal, the sidings at Melle, the railway at Somergem, and the newly established enemy lines between Ecloo and Ghent. Heavy cargoes of bombs were dropped upon enemy barge traffic between Bruges and Ghent, and upon hostile aircraft lined up upon the German aerodrome at St. Denis Westrem. At Somergem a train full of German troops was set on fire, while horse and motor traffic was continuously harassed upon the roads.

The destructive effects of these persistent British raids upon the enemy's road, railway, and water transport often goes far beyond what can be conveyed in the official communiqués. While the broad results of a violent explosion can usually be discerned from the air, the frequently heavy casualties, and the infinite detail of destruction and local disorganisation—in which one minute of bombing demands many weeks of repair work—can often only be inferred, until confirmed from other sources, and, therefore, do not figure at all in the communiqués.

Thus, in the course of a recent British raid upon the railway junction at Aulnoye, it was officially stated that an ammunition train had been hit and set on fire. Captured prisoners now state that the whole train blew up in close proximity to a troop train which had just entered the station. The junction was completely wrecked, and 900 casualties are said to have been caused.

Similarly, at Valenciennes, two ammunition trains which were hit by British aviators at 10 a.m., burned and exploded furiously for two hours. All work in that area had to be suspended owing to shells exploding in different directions.

A highly significant result of the reconnaissance carried out by the Royal Air Force during the week was the identification of a considerable number of new enemy aerodromes, the bulk of them being in the area, between Mons and Maubeuge. As they are much farther back than is necessary for the present operations, the enemy has evidently selected them with a view to the probability of a further retirement being forced upon him.

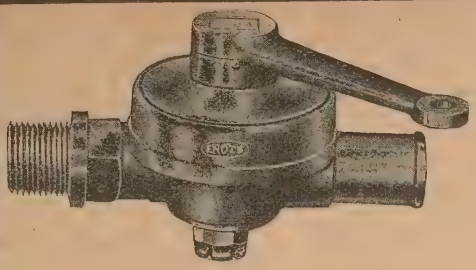
I.A.F.

Despite the prevalence of thick mists in the south, the R.A.F. Independent Force made during the week 16 raids into German territory. The railways at Metz-Sablon were heavily raided five times, while successful attacks were also made upon the poison-gas factories at Mannheim, the railways at Thionville, Coblenz, Mezieres, and Sarreburg, the factories at Kaiserslautern, Burbach, and Saarbrücken, and the barracks at Metz.

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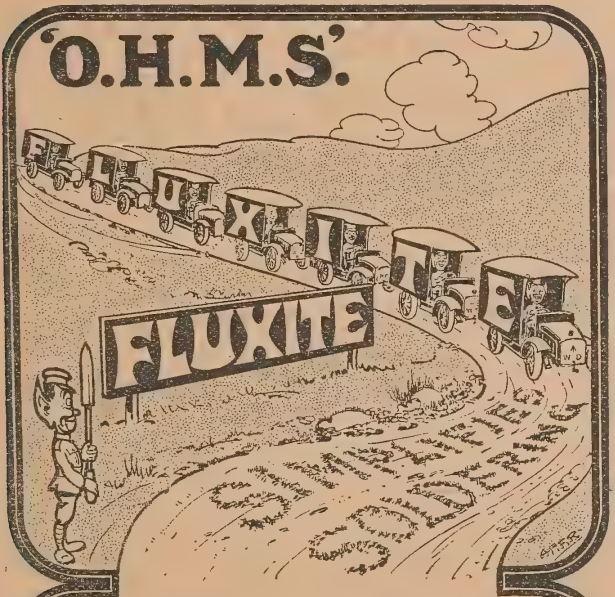
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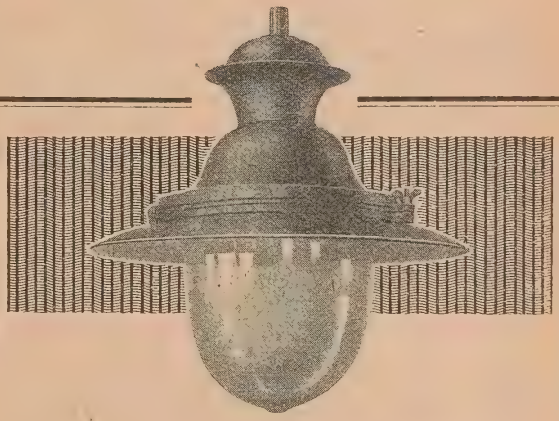
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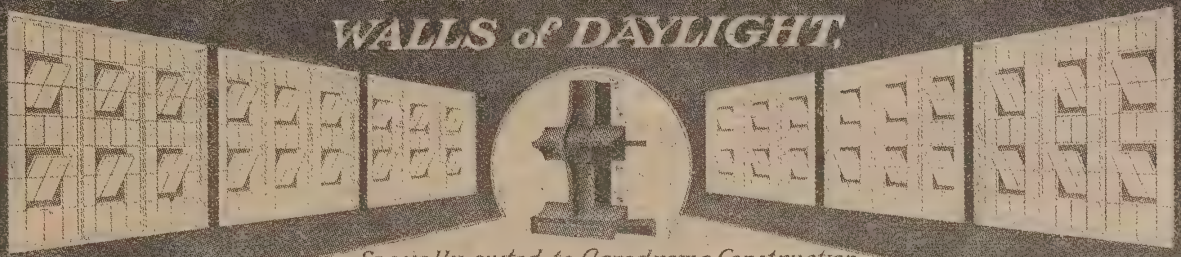
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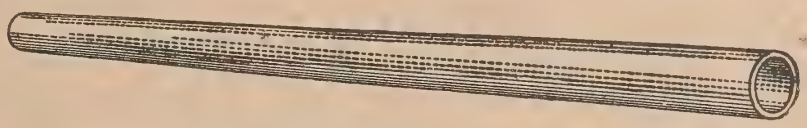
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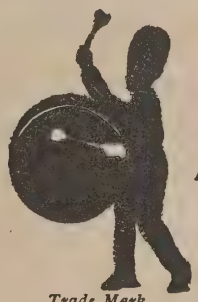
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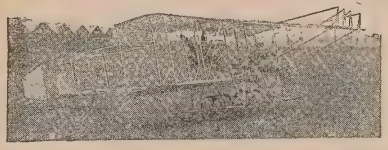
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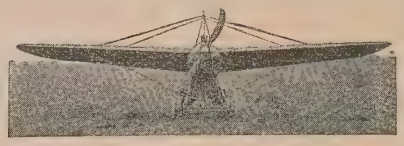
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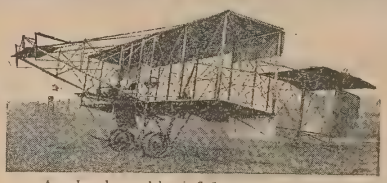
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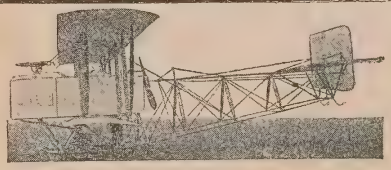
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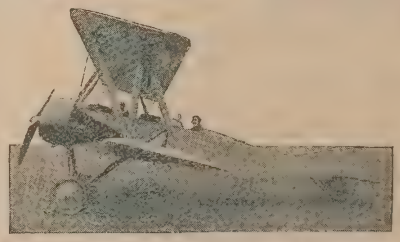
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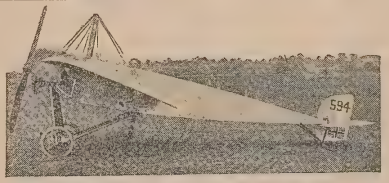
A military biplane, designed early in 1914, which had a speed of 74 m.p.h. with a 100 h.p. Gnome.

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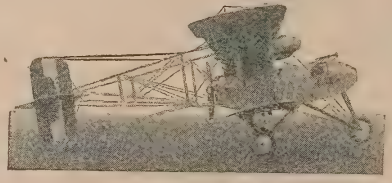
It is impossible, for obvious reasons, to print photographs of machines such as the Company are building at the present time; though it is permissable to say that such construction is increasing constantly, not only in volume, but also in technical importance.



The machine built for the "Daily Mail" seaplane race of 1914. (Seen here with a land chassis.)



A monoplane of the type 14 which figured prominently in air races before the war.



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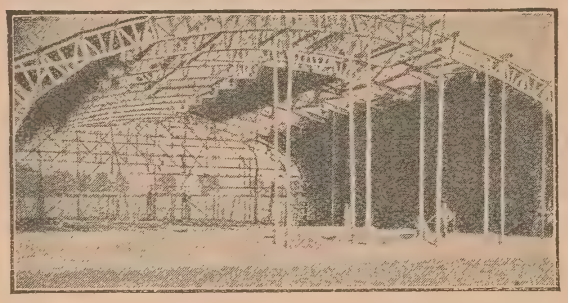
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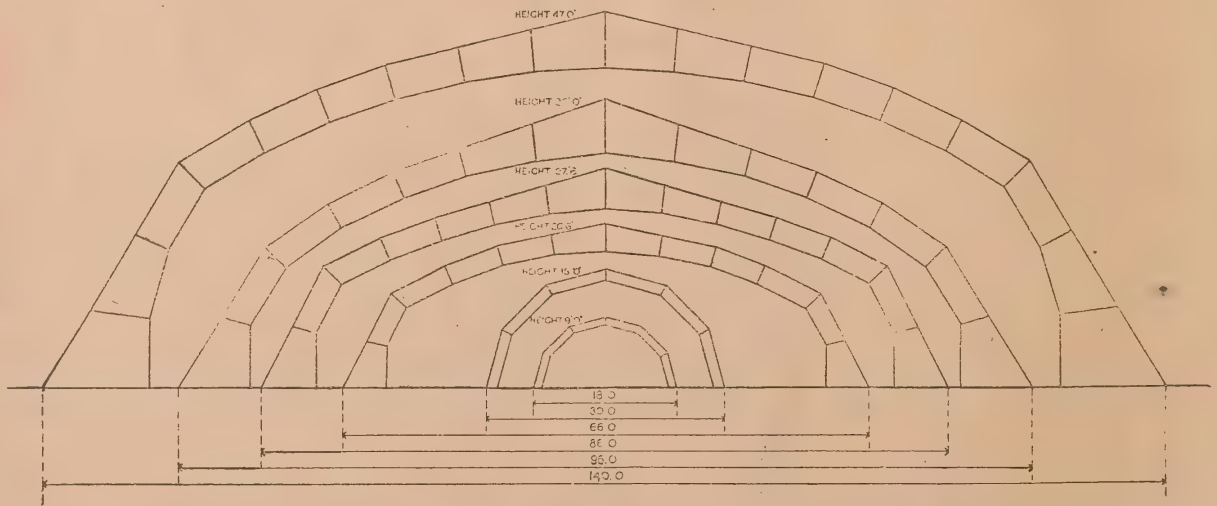
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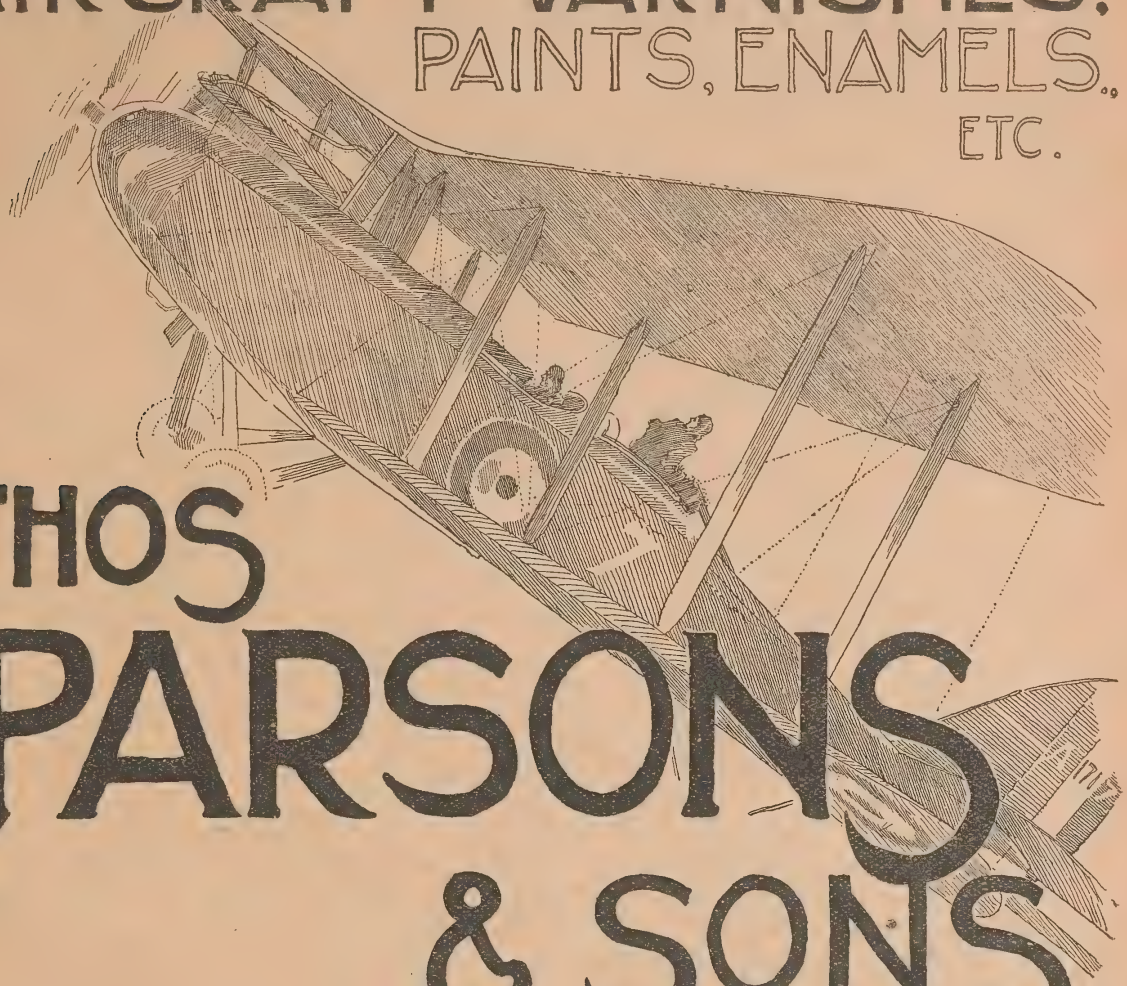
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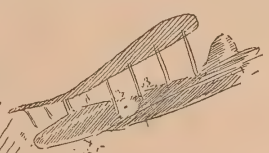
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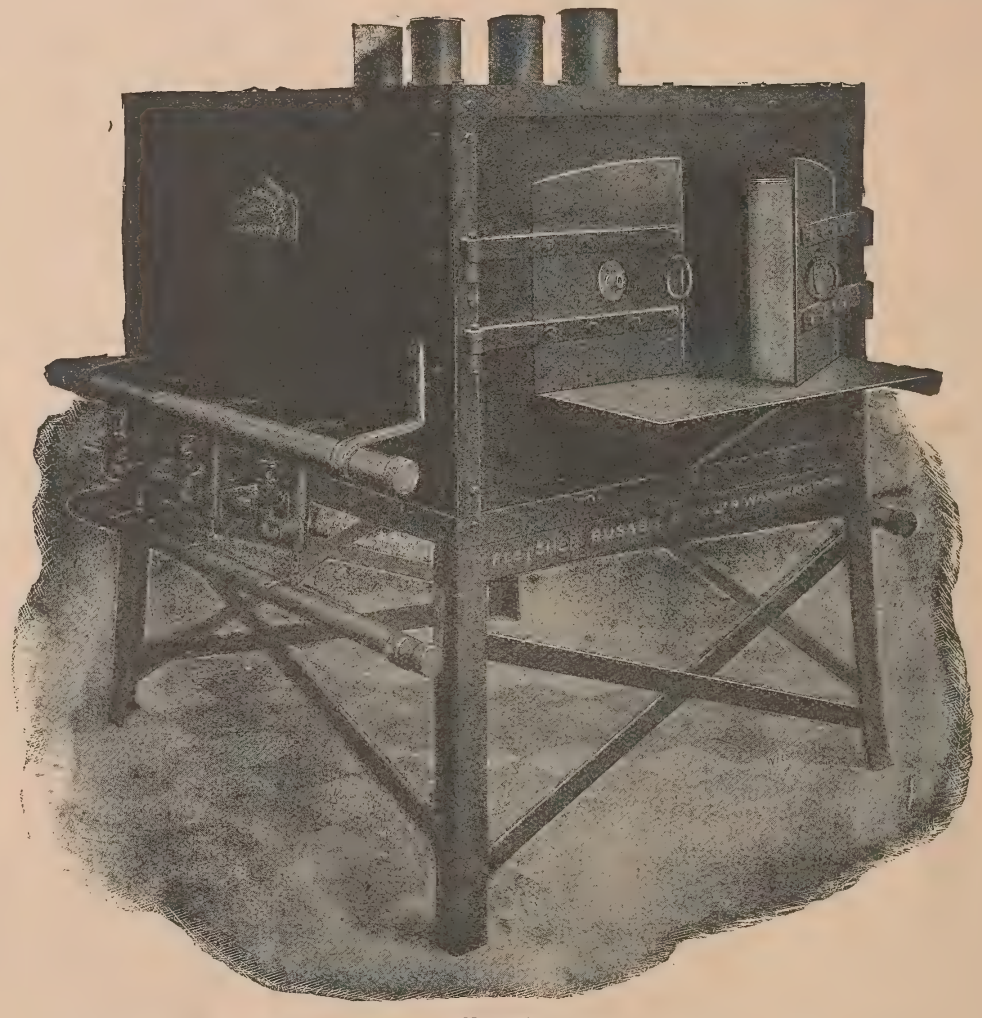
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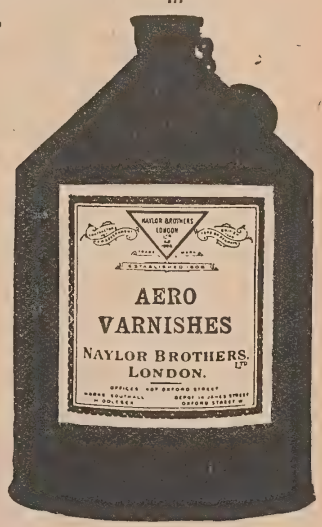
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ON SOME MORE ALLOTMENTS ON PARNASSUS.

II.

[Last week there was published the first of a second series of verses by people in the Flying Services, illustrative of various phases of flying. One could hardly claim that the writers had cultivated the highest poetic heights of Parnassus, so one made bold to class them among the allotment-holders who are doing such valuable amateur work in other fields of war activity.—C. G. G.]

IN TRAINING.

From the active-service people one naturally progresses backwards to the people in training, and as one is progressing backwards one may as well hark right back to the early days of the Central Flying School, where most of our present Brigade and Division Commanders, not to mention many of our most brilliant pilots, received their early training under the beneficent rule of Captain Godfrey Paine, R.N., and Major Hugh Trenchard.

An eminent *littérateur,* now an R.A.F. Staff officer, sent, as the result of the first instalment of Allotment Poems, the first R.F.C. version of "The Tarpaulin Jacket," which, he says, was composed by the late Cecil Marks, then a subaltern of the Special Reserve R.F.C. at the C.F.S. Cecil Marks, who was killed in 1916 as a Captain R.F.C., was a born humorist, with the properly grim touch of the early aviator. Here is his version :—

THE YOUNG AIRMAN.

A gallant young airman lay dying;
And as on his deathbed he lay, he lay,
To his swearing mechanics around him
These last dying words did he say:

Take the cylinders out of my kidneys,
The connecting-rods out of my brain, my brain,
From the small of my back take the gear-box,
And assemble the engine again.

Then gather up quickly the fragments,
And when you return them to store, to store,
Write a letter to Seely and tell him
That his hundred-and-oneth is no more.

When the Court of Enquiry assembles,
Please tell them the reason I died, I died,
Was because I forgot twice "iota"
Was the minimum angle of glide

Ask the Staff-Officer for a school-'bus,
And bury me out on the plain, the plain;
Give Randall a penknife to scratch there
Some formulæ out of Duchêne.

And now I will shortly be joining
The Flying Corps up in the sky, the sky;
Let us hope they have studied "iota,"
And the wings that they give me will fly.

The allusions were, of course, purely topical. Lieut.-Col. Seely was then at the War Office and posed as the Father of Military Aviation. This was about the period when he claimed that the R.F.C. had something like 100 aeroplanes ready to fly, and when Mr. Joynson-Hicks proved that there were only 13, hence the jest about the 101th.

In those days, also, as now, there was war between the theorists and the practical men, hence the "iota" joke. Engineer-Lieut. Randall, R.N., was then O.C. workshops at the C.F.S., and was alleged to be a believer in formulæ and theory, as well as in workshop practice, and M. Duchêne's famous book was the Bible of the C.F.S. theorists of the period. One sees how the spirit of the present day existed even in those dark ages.

From that epoch we may progress forward to the lyrical spasms of a Hun (*Anglicé,* R.F.C. pupil before he has got his wings) on his first attempt to fly alone. As already explained, a Rumpety is a Short-horn Maurice Farman. "Ack Emma" is Signalese for A.M. or Air Mechanic. The Pitot is the well-known air-speed indicator which is supposed to tell the pilot when he is going to kill himself by flying too slowly or too fast. The verses are, at any rate, graphic :—

HIS FIRST SOLO.

The Hun takes a grip on the joystick,
And opens the throttle wide;
The Rumpety starts amoving,
While the Renault roars with pride.
The Pitot is showing forty,
And she's nearly off the ground,
When his foot comes off the pedal,
And the old 'bus slews around.

He hurriedly hauls back the throttle
To stop her "posterior" stunt,
Then tries to steer her head to the wind.
But she swings her tail to the front.
She taxies around in a circle
For a good ten minutes or more;
But, at length, he soothes her temper—
While the onlookers simply roar.

He opens the throttle gently
And keeps her straight as a die,
Till the bally Pitot pointer
Says, "Time to begin to fly."
So he pulls the joystick backward
Till she zooms and nearly stalls:
Then he shoves it madly forward—
Nose down she shudders and falls.

He continues the awful switchback
With the right wings three feet low,
The Rumpety shivers with terror,
And the Renault begins to go.
He misses the hangars by inches,
Hits the ground with a terrible thud,
Bounds twenty feet upward and onward,
Seeing visions of crashes and blood

So he opens the long-suffering engine,
And circles again round the 'drome,
Cuts out, comes down in a nose-dive
That's heading her straight for home;

Flattens out at the fifty-ninth second—
The Ack Emmas fly for their lives—
And right through his own hangar's doorway,
The soloist rides and—survives.

MARSHALL NORMAN.

Next comes the Hun in the stage wherein he has gone up from Rumpeties to Scouts. Some people never become competent pilots of fast machines, and one imagines that F. S. M. is a case in point. On the other hand, he may have "found himself" since then, as so many slow beginners do, and may be now a star-turn Hun-killer—or a casualty. Anyhow, here is his opinion of Scout-flying :—

CAMEL-FLAGE.

When at first I took up flying
And aspired to be a Hamel,
Little dreamt I that my efforts
Would so soon be on a Camel.

Yet one very breezy morning,
'Ere the cock'rel woke the echo,
I was ordered in a Camel
Up above to take a dekko.

As we left old terra-firma,
Hasty prayers my lips were saying,
Whilst in vain I tried to stop the
Camel's tail from gently swaying

When I looped her, how she jerked me,
Till the seat beneath me vanished,
And all hopes of putting "wings up"
From my mind at once were banished.

When I thought I'd done an hour—
'Tho' in fact t'was but a quarter,
I decided t'would be safer
If to earth I gently brought her.

So I stuck her pretty nose down
Rather more than was correct, sir,
And before I had my wits back,
On the 'drome I found her wrecked, sir.

For an hour my Flight-Commander
Painted me in colours vivid,
Till my hair stood up as bristles
And my countenance was livid.

Now it's obvious to me, sir,
Why they name her as a mammal,
For the hump is always there, sir,
When I'm seated in the Camel.

F. S. M.

Following him we come to a merry ditty in the purely narrative manner, some way after W. S. Gilbert, it is true, but witty withal, and giving an excellent idea of the Hun's progress :—

THE BALLAD OF A HUN.

(After W. S. Gilbert).

St. Charles Pendragon Percy Browne
Had lived him all his life in Town;
Not that it matters where he dwelt,
Nor how he looked, nor what he felt,
Because you see
Young Percy B.
Had been called up May twenty-three.

This brave young lad, though scarce eighteen,
Had longed to do the things he'd seen
Described in all the penny rags
And in the illustrated mags.
He longed to "throw a flip" or two
Up in the empyrean blue—
Said Percy B.
"The R.F.C.
Can't win this war unless they've me."

He wrote to his respected Dad
And told him he was feeling bad
At being in the nasty ranks—
"I'd sooner go into the Tanks.
A transfer to the R.F.C.
I would accept most gratefully.
Now, good old pop,
Just make things hop
So I can view life from the top."

At last through perseverance he
Became a "Hun at Castle C——"
(The Censor will not let me state
The aerodrome that held B.'s fate.)
He learned to throw a 'bus around
And how to land upon the ground.
They said that he
Did splendidly—
He'd solo go at half-past three.

He donned his helmet, goggles, and
Felt he was really very grand
When in the "office" he did sit
And rev'd her up a little bit.
He waved a lordly fur-clad hand
And taxi-ed round to beat the band.
Then finally
To windward—E.
Rose off the ground at 63.

He climbed upstairs to such a height,
The aerodrome was out of sight.
Of this poor B. was unaware.
The pitot held his rigid stare—
He did a gentle bank or two
And, murmured, "Perce, I guess you're through,
I'd give a pound
To feel the ground,
It's also tea-time, I'll be bound."

He looked out overboard to see
The aerodrome—why, can it be
That little patch so far down there,
5,000 feet, at least, I'll swear.
Now, what was troubling Percy Browne,
Was how to get the darn thing down.
At length, said he,
"This cannot be;
I really must get down to tea."

A sudden brain-wave pierced his bean,
He throttled back the gasolene
(They call it petrol over here,
And say: "My goodness, ain't it dear!")
Then stuck his nose towards the floor.
At 55 to earth he tore.
An hour or two
Brought into view
The aerodrome and all its crew.

He opened up and brought her round,
So head-to-wind she'd meet the ground,
Then downwards in a gentle glide,
Until the blades of grass he spied.
He flattened out—alas, too late!
The prop met with an awful fate;
While twirling round
It struck the ground
And threw the turf for miles around.

Ten minutes later Browne awoke,
And thought it was an awful joke,
Until he found to his disgust,
His good old 'bus was rather bust.
He tried to move, but found instead
The engine jammed upon his head.
"My boy," said he,
"I clearly see,
This really is no place for me."

The ambulance arrived in time,
To make a happy ending rhyme.
St. Charles Pendragon Percy Browne
Is now a pilot of renown.
He lays his eggs on Fritzi-land,
And says to watch 'em burst is grand.
Says Genevieve,
That when on leave,
He—never mind, d'you get me, Steve?

C. P.

Last among the flying folk comes the advanced-training fanatic, who frequently believes in low-flying, stunting, promenade-scraping, and everything else that

is abominable. Nevertheless, his voice deserves to be heard with the rest, for he also is typical of the R.A.F.

STUNTING.

(With apologies to W. S. Gilbert.)

Our gallant Major, prudent man,
Decided to evolve a plan
Which would dissuade his flight brigade
From "stunts," which he detested
So he declared that all who swanked,
Or looped, or hoicked, or stalled, or banked,
Should forthwith be severely spanked,
And after that arrested.
And you'll agree, I think, with me,
That he was wrong so to decree.
It's evident how well he meant,
But he was wrong, as wrong could be

This very, very stern decree,
You will immediately see,
Caused great dismay in every way
To all whom it affected.
The youth who really tried to fly,
Did he but catch the Major's eye,
Was more or less condemned to die—
He usually objected.
And you'll agree, as I expect,
That he was right to so object;
He wished to fly respectably,
And make his flying quite correct.

But as the Major rises late,
And Pilots feed at half-past eight,
They have from then, till after ten,
To let off steam completely;
So daily for an hour or more
They loop and hoick and bank galore
Till ten o'clock, or just before,
And then they fly discreetly.
And they are right, I think you'll say,
His orders thus to disobey;
For if they did as they were bid,
They would be bad, now, wouldn't they?

A bad, wicked fellow this, who sets his love of flying before his orders. Still there is a big difference between stunt-flying over an aerodrome or its environs and scaring children on the sands, or knocking lamps off piers. However, let us hope that by now he has won a few D.S.Os. and things by excellent ground-strafing, for which stunt-flying is alleged to be the only proper training.

THE AIRMEN.

Finally, so far as the R.A.F. proper is concerned, let us take a look at the "Airman" as depicted by himself. Be it remembered, an Airman is now officially one of the rank and file of the R.A.F., and not a gallant young officer with wings and medal-ribbons and a trail of admiring flappers. An officer cannot be an airman, though an airman may be an aviator. The correct airman of to-day is not a smart R.N.A.S. air-mechanic in a blue uniform which makes him look like a Petty Officer R.N., nor is he an R.F.C. man in his neat double-breasted jacket and jaunty little cap. He is just a figure of fun in what looks like second-hand Army khaki.

Here is one version of him, as he was before the Fall—*id est*, when the R.F.C. *was* the R.F.C., written by an N.C.O. of the R.F.C.

THE SEVEN AGES OF MAN.

(As applied to the R.F.C.)

He slinks along with fearful tread,
With cap perched backwards on his head,
And Army boots titanic;
His brow grows wet with honest sweat
Whene'er an officer is met,
For he's a 3rd Mechanic!

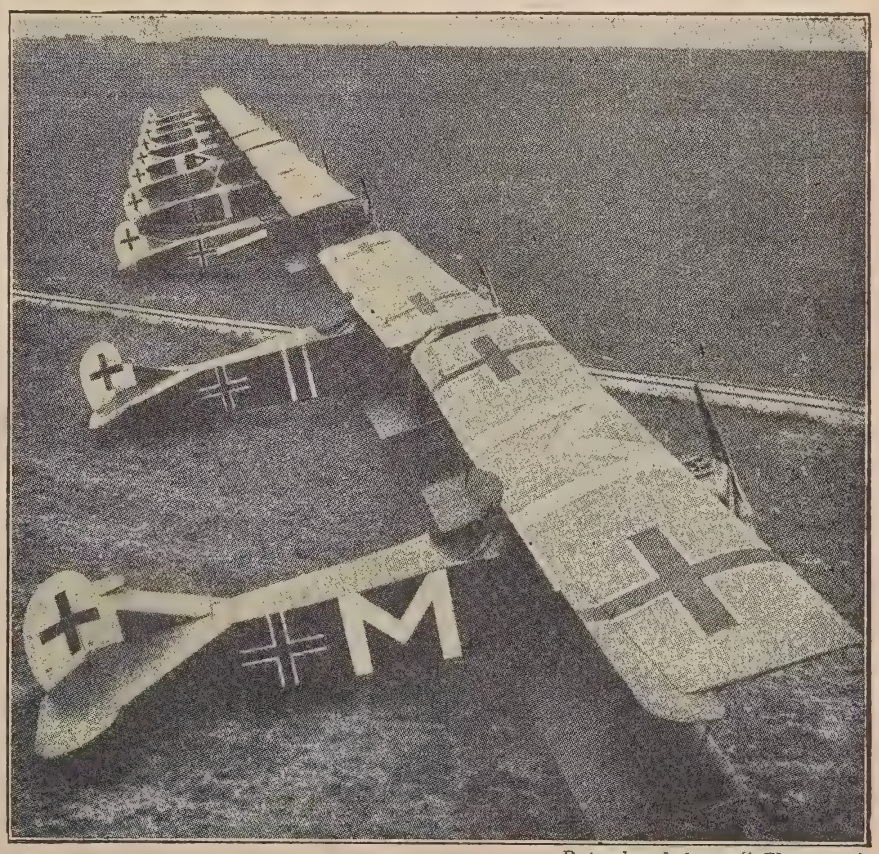
He strides the streets with easier grace,
And looks the whole world in the face—
A mighty man he's reckoned.
No more he draws his one-and-eight,
Promotion comes to those who wait,
And now he is a Second.

He smiles at every "2nd Loot,"
He rails at every raw recruit,
And calls him "comic teller."
He's mighty smart at repartee,
Above his elbow you may see
A wonderful propeller!

His voice is like the crack of doom,
It barks out fiercely through the gloom,
And none may contradict him.
Two stripes are blazoned on his arm,
And all the shocks of War's alarm
Confront the wretched victim!

Behold, the parting of his hair!
Behold him swagger on the Square!
Of stripes he has one more on.
A dapper cane is in his hand,
He makes you vaguely understand
That there must be a War on!

He bids you come, he bids you go,
And helps you onward with his toe,
And dearly loves his duties;
For he's a Flight—a full-blown Flight:
You quake and tremble in his sight—
"Get off the earth, you beauties!"



Reproduced from "Flugsport."

A Fokker Single-Seater Jagdstaffel (Chaser Squadron) on the Western Front.

And now he sports a golden crown,
And cuts a dash throughout the town,
A giant grim, I wager.
And should he catch you in the street
With puttees dangling round your feet,
You'll know he's Serjeant-Major!

G. R. S.

And here is another version, also of the airman as seen by himself, again written by an N.C.O. of the R.F.C.—somehow the R.N.A.S. does not run to literature.

'ARRY THE AIRMAN.

(Pride—His Mother's View.)

Yus, 'e's listed, to be a hairman, and 'e's left 'er the base terday;
'E's gone to a place called Farnb'rough—some heighty miles away.
An' 'e's left me nigh 'eart-broken, and me tears 'll never dry,
'E was born to be a hangel—yer cud see by the light ov 'is heye.

'T was nineteen years last birthday, stood four feet height in 'is socks,
An' as bonny a lad as yer'll find 'em—'ere's one o' 'is curly locks.
'E follered 'is dad's perfession, an' 'is grandad's afore 'im, too,
Making bladders fer babies' squeakers, an' stickin' 'airs on dolls wi' glue.

'E sez that 'e'll get 'is brevvy, but ah don't know what that is,
An' ah never eggsactly arst 'im—ah never was one ter quizz.
Ah think it's a sort o' horder that they gives ter the smartest chaps
(That reminds me ah've got ter send 'im a box o' me ginger-snaps).

'E'll be a 'ansom lad in khaki, like them smart young hoffisers 'ere.
The thort o' my 'Arry a hairman, it makes me 'art go queer
An' when they sees 'im marchin', and watches 'is 'ansom curves,
They're shure to make 'im a corporal, an' no more than 'e deserves.

(The Fall—His Drill-Sergeant.)

So yer've listed to be a Airman?—we'll jolly well put yer through.
We've seen your sort afore, me lad—'undreds o' blokes like you.
Where d'ye come from, Birmingham, or some place near by;
I knew it as soon as I saw yer, be the light of Old Nick in yer eye.

How old are yer? What's yer father? Does yer muther take lodgers in?
'Ave yer washed yer face this morning, or is that the shade o' yer skin?
What trade 'ave yer worked at lately? Did yer get the push from yer firm?
So yer goin' to be a Airman? You snivelling Brummagen worm.

So yer wants to be a pilot, an' ter get yer brevvy as well.
Wouldn't you rather get married, or book a front seat in 'ell?
Well, ther's one thing dam well certain—we'll always see yer through,
An' if ever you gets yer brevvy, you can bet yer boots you'll do.

Gorblimey you are a smart 'un, you wi' the knock-knees—YOU!
I'll lay you ninepence to fourpence y've just escaped from the Zoo.
Yer feet! Is that what yer call 'em? Stand up so yer can see.
Which way d'ye think y're lookin'? At the man behind you or me?

(His Fate.)

So they gave him ten days "on the square," boys, which means that he had to go straight,
From reveillé at five in the morning till bedtime, tho' that wasn't late,
An' he formed fours and right-turned, and left-turned, and 'bout-turned and doubled all day;
It's a way they have in the Army—a charming, affectionate way.

Well, 'Arry's a full-fledged airman, 'least he went that way all right.
He was carrying bombs and petrol when the bally stuff caught light;
So we cleaned the sky with a dredger, and searched for him every day,
But we've come to the sad conclusion that he's not coming back this way.

And by way of ending up the Airman's view, here is another set of verses, also written by an R.F.C. N.C.O. :—

QUESTION AND ANSWER; OR, SOMEWHERE IN FUTURITY.

"What did you do, Daddy, in the War?"
"My son—I joined the Flying Corps;
The famous two-legged Flying Corps!"

"And did you fly an awful height?"
"I guess I flew with all my might,
Whene'er the S.M. hove in sight!"

"And did you vol-plane, bank, and skid?"
"My hoary hairs! you bet I did,
Till earth of me was nearly rid!"

"And did the people see you fly?"
"Rar-ther: they stood in thousands by,
Prepared to see me fly or die!"

"But did you ever recreate?"
"Well—yes, when I was on Cook's Mate,
And swabbed each blooming pot and plate."

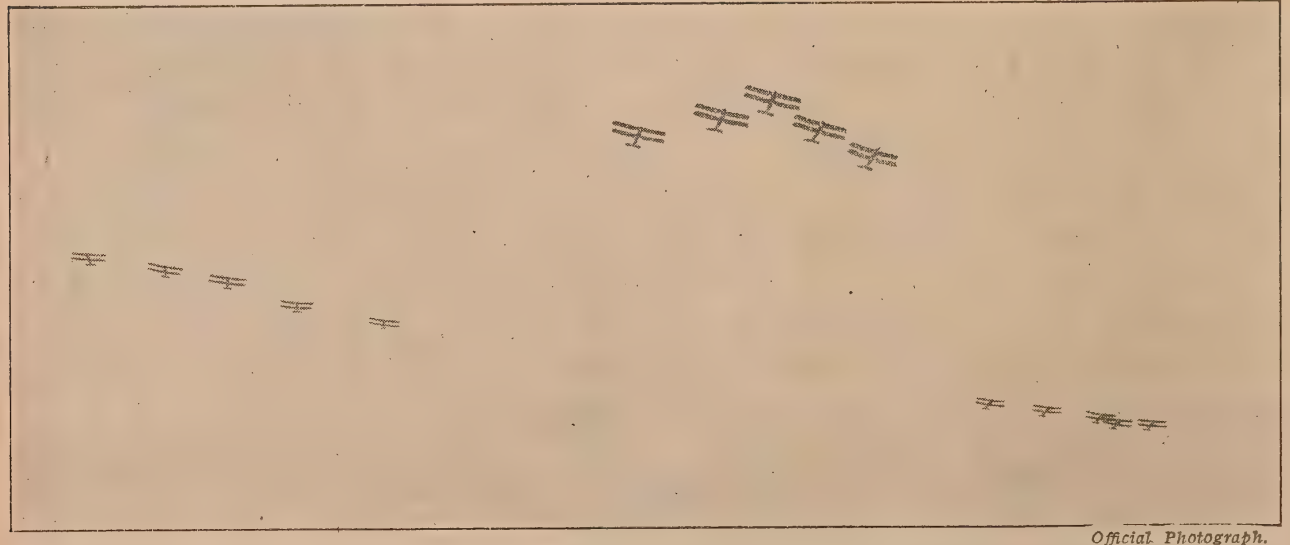
"And now your flying days are o'er?"
"Ah, yes—it's such a beastly bore;
Besides—it makes one's feet so sore."

"And were they kind to you, my Dad?"
"My son, their kindness made me sad;
It overwhelmed me so, my lad.

Their kindness made me dream of home
From whence I never more will roam."
So ends this dinky little pome.

J. M.

They are as cheerfully pessimistic as are the verses of his officers. Anyone who did not know the British soldier man might adduce any of these verses as examples of low *moral*, lack of patriotism, or any of the other qualities which help to lose wars. But the British soldier is like the lady who said that "she enjoyed very bad health," he is never really so happy as when he has a legitimate grouse.—C. G. G.



Official Photograph.

An Exhibition of Formation Flying before H.I.H. Admiral Prince Yorihito of Hagashi Fushimi on his Visit to a British Aerodrome.

. The .

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THE KING'S MESSAGE TO THE R.A.F.

The King has sent the following telegram to the Secretary of State for the Royal Air Force :—

I offer you and the Royal Air Force my warmest congratulations on the successful results of air fighting on Oct. 30th, and on beating all previous records. Such achievements testify to the spirit which animates all ranks in their determination to maintain our mastery in the air and cannot fail materially to assist the steady advance of my Armies in the field.

George R.I., General-in-Chief.

[*The telegram refers to the G.H.Q. communiqué, dated Oct. 31st, which appears on page 1722B.*]—

GENERAL SYKES AT VERSAILLES.

The following has been communicated to the Press :—

Maj.-Gen. F. H. Sykes, C.M.G., the Chief of the Air Staff, is attending the sittings of the Allies' Conference at Versailles, with the leading Naval and Military advisers of the British Government.

R.A.F. RECORDS.

In connection with the crashing of 67 German machines in one day by the R.A.F., the "Times" Special Correspondent said on Nov. 5th :—

"There is one brigade which already held the 'record' by having sent down 22 enemy machines in 24 hours with the loss of only nine of its own; this time it exceeded even that performance. In that single day the brigade crashed 21 German machines, besides destroying one balloon, with the loss to itself of only one machine."

THE R.A.F. MEDICAL SERVICE.

On Oct. 31st **Major Baird**, Under Secretary, Air Ministry, replying to **Sir Watson Cheyne,** said that the resignation of the Medical Administrator of the Air Service originated in a difference of opinion between himself and the Medical Administrative Committee in regard to their respective spheres of responsibility. The appointment of his successor would be made public at an early date.

On Nov. 4th, answering **Maj. H. Terrell, Maj. Baird,** who was imperfectly heard, said that the post of Medical Administrator of the Board had been offered to Col. Fell, R.A.M.C. One of the conditions of the office was that he would be guided by the principles laid down by the Watson-Cheyne Committee. Col. Fell was at present engaged in visiting stations in this country and abroad, and his answer would be received in due course.

* * *

A Medical Correspondent of the "Times" writes :—

Col. Matthew Henry Gregson Fell, C.M.G., who is 46 years of age, has had a distinguished record in the Army Medical Service. He obtained his commission in the R.A.M.C. in 1899, and served in the South African War from that year until 1902, receiving the two medals with clasps and being mentioned in dispatches. After serving for some time in France in the present war, during which he has been mentioned in dispatches six times, received the brevets of Lieutenant-Colonel and Colonel, and been appointed a C.M.G., Col. Fell was given an appointment in Mesopotamia, and it was largely due to his administrative ability that order was brought out of the chaos that at one time prevailed in the Medical Service there. Upon him to some extent fell the responsibility of remedying the defects which were revealed in the Mesopotamia report, and the manner in which he discharged his duties won the admiration and respect of all those who benefited by his labours. Though he was not in supreme control, his services marked him out as a man of first-class ability. His great organising power and thorough sympathy with modern scientific research should make him an excellent head of the medical branch of the Air Service.

ON THE WESTERN FRONT.

Aerial activity on the British Western front during the past week has been chiefly centred in the section between Tournai and the River Sambre.

Possibly owing to improved weather conditions and the serious threat to his lateral communications by the British thrust on the Solesmes-Le Cateau front, the enemy's aviators have shown fight throughout the week. This was notably the case on Sunday and Monday, Oct. 27th and 28th, when severe aerial combats took place over the Le Quesnoy-Valenciennes railway, and in the neighbourhood of Englefontaine, south of Le Quesnoy.

The aerial fighting reached its zenith, however, on Wednesday, Oct. 30th, when 67 enemy machines were destroyed and 15 driven down out of control; 18 British machines were reported missing. For the whole week 228 German machines were destroyed and 52 driven down out of control; 67 British machines were reported missing.

The R.A.F. Independent Force, during the past week, made 31 separate raids over Germany and dropped nearly 40 tons of bombs. The poison-gas factories and aeroplane works at Mannheim were attacked on three separate occasions during the week. The railways at Saarbrücken were raided four times, Metz-Sablon triangle twice, Frescaty and Morhange aerodromes, twice each, Burbach blast furnaces three times, Longuyon railway junction twice. Effective raids were also made upon the railways at Mainz, Thionville, Coblenz, Baden, Offenberg, Treves, and Écouviez, the chemical factories at Karlsruhe and Worms, and upon the enemy aerodromes at Hagenau and Jametz. A number of heavy bombs were dropped, in the course of these raids, with good effect.

ON THE ITALIAN FRONT.

Prior to Sunday, Oct. 27th, when the Italian offensive re-opened, the weather in Northern Italy, and especially near the Gulf of Venice, had been exceedingly unfavourable for aerial work. However, on the 27th a marked improvement in the conditions led to great activity by the British squadrons. Much aerial reconnaissance was carried out in co-operation with the British artillery; some hundreds of photographs were taken, and some highly effective bombing raids were made upon the enemy's aerodromes in the rear.

On Tuesday, Oct. 29th, when following the rupture of the enemy's line on the Montello front, Austrian troops were observed retreating hastily in large columns along the roads from Conegliano to Sacile, and from Conegliano to Vittoria. British low-flying aeroplanes attacked these roads throughout the afternoon and early evening with machine-gun fire and bombs.

On Wednesday morning British aviators reported that the enemy aerodromes at Tanuse and Pordino, and the dumps at Sacile, which had been bombed on the previous day, were in flames, while at Godega aerodrome eight enemy machines were observed to have been destroyed by our bombs. The road from Sacile to Pordenne was bombed and machine-gunned, a great amount of damage being done to guns and transport.

THE ADOPTION OF THE PARACHUTE.

On Oct. 30th **Maj. Baird** stated in the House of Commons, in reply to **Mr. Morrell,** that sufficient progress with experimental parachutes for use for aeroplanes has been made to justify their provision for certain types of machines. The policy is to provide them first for machines in use in France.

It is satisfactory to hear that at long last parachutes are to be used for life-saving purposes on aeroplanes on active service, and one is confident that the results will justify their adoption. It is, however, a matter for regret that it was necessary for the enemy to demonstrate the efficacy of the parachute. One would have wished the British authorities to have adopted the aeroplane parachute on their own initiative, seeing that this country led the way in the evolution of this very desirable apparatus.

ENEMY LOSSES.

During the four months ending Sept. 30th, 1918, 1,443 enemy machines have been destroyed and 558 driven down out of control on the Western front; 668 British machines were reported missing during the same period.

These figures do not include the heavy losses inflicted by the British coastal squadron operating over Belgium, or by the R.A.F. Independent Force in the course of its many raids into Germany. They are also exclusive of the very severe casualties caused by the French and American Air Services upon their sectors of the front, and of German air casualties in the other theatres of war.

With the turning of his right flank in Belgium, the enemy has already lost more than a dozen aerodromes, with a total accommodation of 142 sheds. The large group of aerodromes round Ghent, of which St. Denis Westrem is the best known, is already threatened by the Allied advance.

These successes have exposed a new sector of the Rhine to the possibility of aerial attack, and have also robbed the enemy of a number of defensive aerodromes.

RAIDS INTO GERMANY.

A Karlsruhe telgram to the Dutch papers, received on Nov. 1st, says :—

Mannheim and Ludwigshafen were attacked on Wednesday night by enemy aeroplanes. Only slight material damage was done. Aviators also attacked Heidelberg, Bruchsal, and Hockenheim. Considerable material damage was done at Heidelberg to houses; at Bruchsal and Hockenheim only slight damage was done.

WIRELESS TELEPHONES.

The "Evening News" of Nov. 1st publishes the following :—

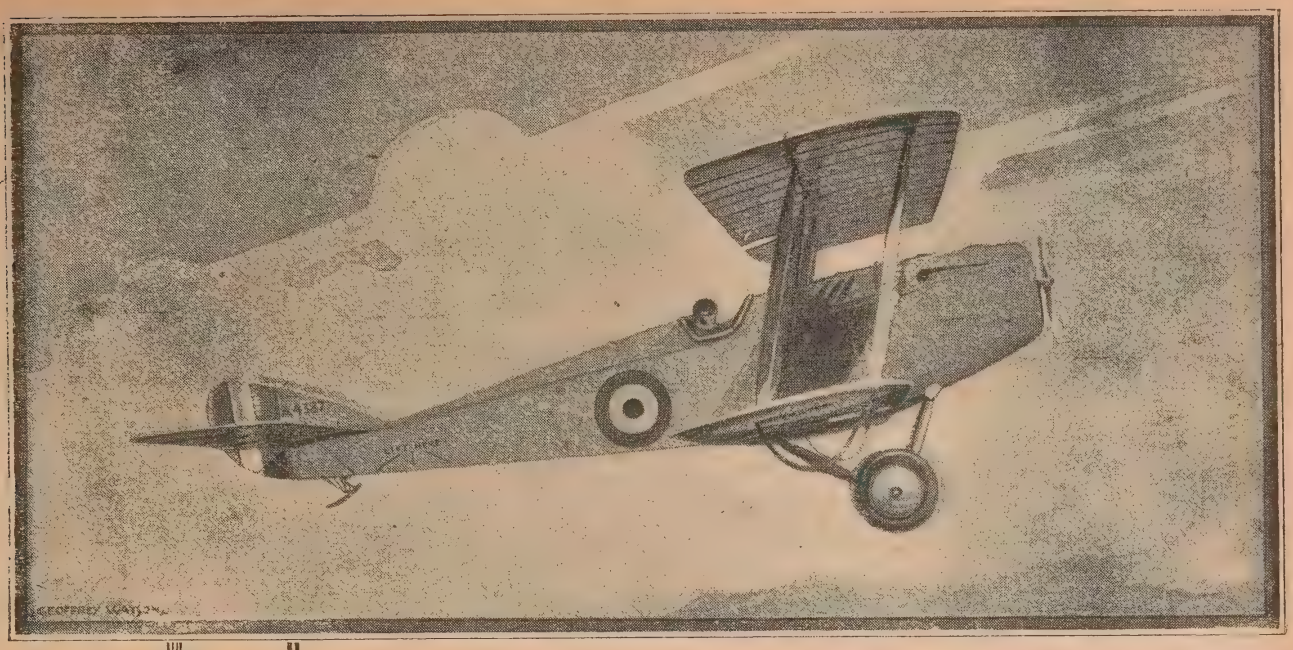
A device by which aviators may receive messages in the air by wireless is claimed to have been produced by Dr. Lee de Forest, the American wireless inventor.

Dr. de Forest, who claims that his invention, the Audion, has made possible long-distance wireless telegraphy and telephony, has recently arrived in London to exhibit his apparatus to the British Signal Corps.

By the audion, it is stated, sound waves are magnified a million times without affecting their tonal qualities. Thus messages which would otherwise be practically undetectable are easily understood.

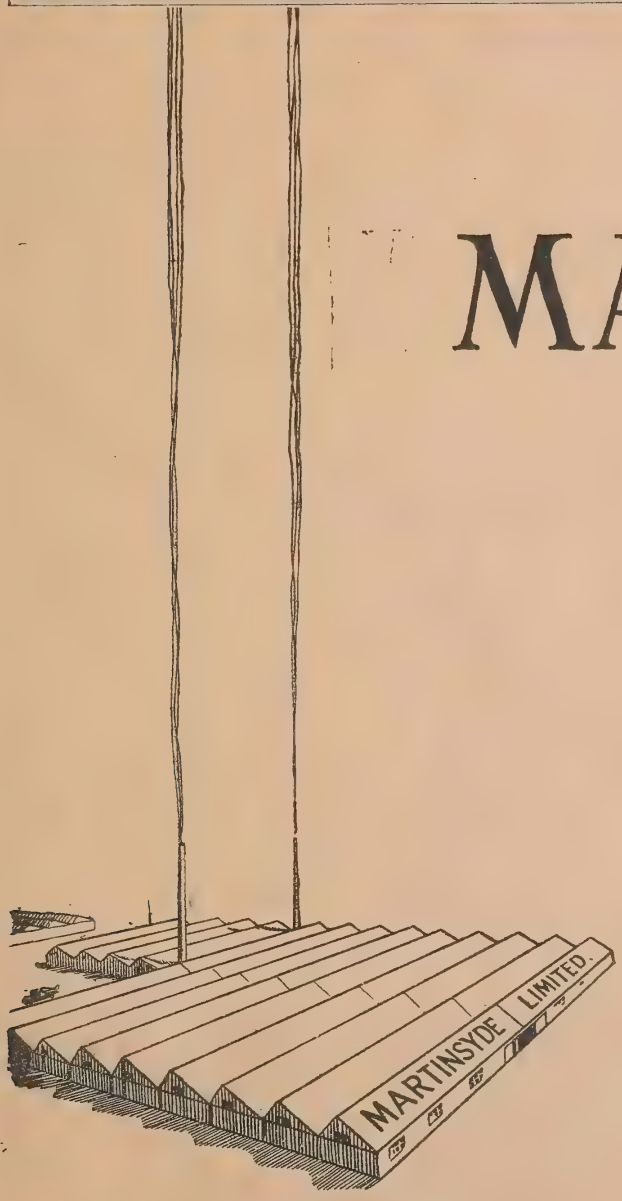
"All the U.S. aeroplanes," said Dr. de Forest to a Press representative, "are now fitted with this apparatus, which has made it possible for the pilot to receive a message in the air despite the noise of his engine."

[The claim, at the present time, seems to have its humorous aspects.—Ed.]





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THE ROYAL AIR FORCE CLUB.

The Committee of the Royal Flying Corps Club announces that Lord Cowdray has most generously given a sum of £100,000 for the establishment and endowment of a new club to be called the Royal Air Force Club.

Lord Cowdray, who was first Air Minister, is still intensely interested in the Royal Air Force, and he hopes that the new club will become the recognised Service Club for the R.A.F., and that it will be housed for the purpose in a building which will be worthy of the Service and a memorial of its work in the war.

The Royal Flying Corps Club has nearly 1,000 members, and the temporary premises in Bruton Street have been for some time overcrowded. It is confidently expected that with the aid of this endowment the new club will for many years to come be not only a bond of union, and a meeting-ground for officers in the Royal Air Force who have fought in the war, but also the home of the Service.

With reference to Lord Cowdray's gift the following letters are of interest:—

16, Carlton House Terrace, S.W., Oct. 30th, 1918.

My Dear General Brancker,—In Sir David Henderson's absence I have much pleasure in advising you and the members of the committee of the Royal Flying Corps Club that I herewith give £100,000 (cheque enclosed) for the purpose of providing the Service Club for the Royal Air Force. This sum should ensure a permanent Club Home worthy of the Airmen and of their brilliant and superlatively heroic work.

If my offer be accepted, I shall invite my colleagues of the first Air Ministry—viz., Maj. Baird, Sir Godfrey Paine, Sir David Henderson, Lord Weir, and yourself and Mr. Percy Martin, also Sir Paul Harvey, the then Secretary to the Ministry, to join with me in the responsibility of finding a suitable building and of preparing and equipping it as a club, and, further, in drawing up the condition under which it should be handed over to the new Air Service Club.

With all my heartfelt good wishes for the club, and for God's care of its members.—Believe me, yours very sincerely. (Signed) COWDRAY.

Air Ministry, Strand, W.C.2.

My Dear Lord Cowdray,—I take the earliest opportunity of tendering you, on behalf of the Committee of the R.F.C. Club, our most grateful thanks for your munificent gift, which is destined to provide a Service Club for the Royal Air Force.

Your great generosity will, I am sure, provide a permanent Club Home worthy of the Airmen to whom you allude in such enthusiastic terms.

A more valuable form of assistance at this point in the history of the youngest of the Services could not have been conceived, and your name will go down to the coming generation of Airmen, not only as their first Minister, but as their greatest personal benefactor.—Yours most sincerely, (Signed) W. S. BRANCKER.

THE CHEVRONS CLUB.

A short time back the non-commissioned officers in the Army, and the petty-officers in the Navy, were without any club premises. They were a sort of in-between, as the commissioned officers, of course, could pick and choose a club, and for the men in the ranks there was ample provision. But now a club is in being for the special benefit of the N.C.O.'s and P.O.'s.

Any non-commissioned officers in the R.A.F. and the Army, and petty-officers in the Navy, can stay at the Chevrons Club when passing through London, either going or returning from leave. Or, if their homes are abroad, they can spend the whole spell of leave at the club.

This institution is a veritable home-from-home for the N.C.O.'s and P.O.'s, and their comfort is considered in every manner. The food served there is both plentiful and of good quality, and well within the limits of Naval or Military pay.

There are good sitting-rooms, reading-rooms, writing-rooms, dining-rooms, and bedrooms, and although no strict discipline is enforced, the men consider it a point of honour to behave in a manner creditable to their rank.

This club has been a great boon to the N.C.O.'s and P.O.'s, but many have to be turned away at night owing to the scarcity of rooms. Generous support is needed to extend these premises, and anyone who wishes to help is invited to write to Sir Edward Holden, Bt., the Hon. Treasurer, The Chevrons Club City Offices, Bridge House, 181, Queen Victoria Street, E.C.

Certain misapprehensions seem to exist concerning the necessary qualifications for membership of the Chevrons Club which has been formed for the benefit of non-commissioned officers in all the branches of the King's Service. This misapprehension has apparently arisen owing to an erroneous idea that the possession of Service chevrons is necessary to render a man eligible for membership.

As a matter of fact, the use of the word "Chevrons" in the name of the club is intended to describe the rank of its members—namely, N.C.O.'s, most of whom wear chevrons as a distinctive mark.

Naturally, if the possession of Service chevrons had been essential, this would exclude all N.C.O.'s of the Royal Air Force from membership, because officially they are not allowed to wear Service chevrons, no matter how long they may have served in a war area.

Also N.C.O.'s, petty-officers and leading seamen are open to membership, even if their rank badges do not include chevrons of any sort, so a too hasty conclusion concerning eligibility should not be made. Men of all non-commissioned ranks, who wish to obtain further information concerning the club, are invited to communicate with Montgomery Martin, Secretary and General Manager, The Chevrons Club, 74, St. George's Square, S.W.1.

CHEVRONS STILL FORBIDDEN.

Maj. Baird, Parliamentary Secretary to the Air Ministry, in the House of Commons on Oct. 31st, still denied the right of officers and men of the R.A.F. to wear chevrons. He said:—

"The terms of service in the force are such that men from the naval service would be entitled to wear chevrons under conditions not entitling men from the Army, and great injustice would result."

LORD WEIR AND THE OVERSEAS CLUB.

It is reported that Lord Weir, the Air Minister, has shown his appreciation of the activities of the Overseas Club and Patriotic League by joining the organisation as a life member.

AMERICAN AIRCRAFT PRODUCTION.

The "Daily Telegraph's" New York correspondent writes on Nov. 1st:—

The alleged virtual failure of America's aircraft production of six months ago has been replaced to-day by a successful production which, according to well-informed observers, will rank high as a military achievement. To date, it is declared, America has built more aeroplanes of all kinds than were engaged last July on the Western front on both sides, and she has produced 27,000 aeroplane engines, of which more than 11,000 are Liberty motors. American manufacturers are ready to support their claim with test records and production charts that the Liberty motor and the De Haviland aeroplane are the sensation of the year, both here and abroad, and the Allied Governments, it is said, are ordering all they can get.

Some idea of the remarkable productions here may be obtained when it is considered that the Americans have built more engines this year than England built from the time she entered the war until the end of 1917, and the same is true of France. The United States have built more aeroplanes this year than England did from 1914 to the end of 1916. Production has now reached a point, it is said, where the supply is greater than the cargo space available for transportation. America's aircraft programme has been carried out to date at a cost of £97,000,000, and there is a balance of £183,000,000 still remaining, which, it is estimated, will bring the total of Liberty motor production to 50,000 if the war is prolonged, and provide an overwhelming number of aeroplanes. It is being questioned in some quarters whether the charges that the money voted for aeroplanes has been "largely wasted" are justified.

[All of which makes very interesting reading.—Ed.]

THE AIRCRAFT STRIKE.

As has been stated in various papers a dispute threatening serious trouble in the Aircraft Industry has existed in the national factory at Aintree for the past week or so.

Twelve months ago the Ministry of Munitions established standard wages, rules, and conditions for skilled aircraft woodworkers, on the understanding that all systems of payments by results then in existence should continue, and that new systems agreed to by the workpeople in any particular establishment would be approved and supported by the Ministry.

Questions have since arisen concerning the application of this understanding to new systems and have been referred to the executive councils of the various unions with a view to a further conference between the Ministry and the National Aircraft Committee.

A deputation from the Liverpool District Woodworkers' Committee, accompanied by members of the National Aircraft Committee, visited the Ministry of Munitions on Oct. 28th, and a prolonged discussion took place on the points in dispute. The Liverpool Committee were pressed to leave the local difference to the settlement of the National Aircraft Committee. The Liverpool Committee ultimately decided to confer further with their local constituents.

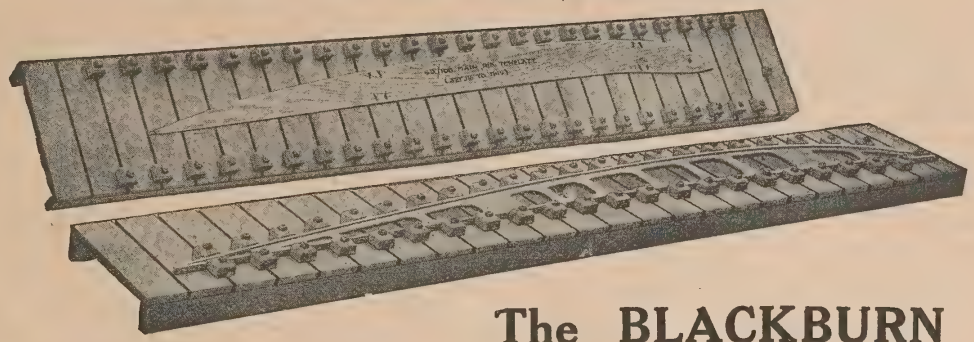
As a result, a settlement was made on Nov. 3rd, and it was decided to resume work on the following day, the bonus scheme being suspended temporarily, so far as the woodworkers are concerned, to enable the matter to be considered further. The terms of settlement to be agreed upon with the Ministry of Munitions are to apply only to the Liverpool area.

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THE ROYAL AIR FORCE IN PEACE TIME.

BY HENRY FORESTER.

Survey Work.

There is one possible duty of the Royal Air Force which is commonly forgotten, and that is the assistance of aircraft in making a topographical survey of any country. By various means which it would be improper to detail during hostilities—though both sides probably employ the same methods—it is possible to eliminate the distortion of an aerial photograph, and consequently to prepare an accurate map from a series of such photographs.

In the past it has been necessary to make an elaborate and expensive survey of country which it is desired to map, and further surveys have had to be made periodically in order to keep the original maps up to date. The process has not only been expensive but slow. The delay in carrying out the re-surveys for the correction of earlier maps often means that the new issues are themselves out of date when published.

It will remain necessary for the preliminary survey to be made on land, as contours cannot be plotted from above, and there are other things which remain mysterious to the aviator. All corrections can be made by means of aerial photographs unless an earthquake has, with customary lack of consideration, disarranged the profile of the terrain.

The most ephemeral of jerry-built houses will be recorded on the ordnance survey maps of the day if the swift assistance of the aeroplane is employed. Nothing that would appear on a map can escape the aerial camera, and the speed with which a re-survey could be completed would render the periodical issue of corrected maps comparatively inexpensive.

In years past the delimitation of boundaries in the wilder parts of the globe has meant the employment of joint expeditions of geographers from both countries concerned, the work of which has proceeded slowly and acrimoniously through months and even years. To-day it is possible to employ either dirigible balloons or aeroplanes to photograph the debatable land in days where the older method took months.

Once photographed, a map can be constructed, over which a joint commission can wrangle in comfort, surrounded by all the luxuries of any immoral capital in Europe. No country ever yet desired to settle a boundary question, but that constitutes no reason at all why the dispute should be carried out under unpleasant conditions. One can always quarrel most effectively when one is comfortable.

With the end of the war new conditions of life will become the rule. The whole world, with the exception of a few South American Republics which are not unused to hostilities and to political revolution, has been affected by the present troubles to a degree previously unknown in history. The Deluge perhaps had a universal application, but, if Biblical statements may be taken literally, history began anew with the sinking of the floods.

Modern Amusements.

People have lost the habit of peace. Utilitarian measures and the material aspect of life have ousted for a time all the finer things. Art, literature, philosophy, and all that regulates the proper passage of life are temporarily unconsidered and ignored.

The excitement of the internment campaign and the amusements of the munition market have eliminated intellectual pursuits from the daily round of existence. Those who have stayed at home are more anxious to oust foreign rivals from well-established and possibly efficient businesses than to make England famous for enlightenment or for generosity of mind. Pleasure, except amongst the licensed idlers of the Trades Unions community, is regarded as a sin little less evil than the true patriotism of those who go overseas to fight rather than remain at home to make money.

Time heals all things, and a few decades of peace will restore reason to its proper place in the land. The material changes in existence will, nevertheless, be vast. Aircraft, the amusement of the inventor and of the reckless in pre-war days, have already come into their own, and when peace again returns the habits of human life will undergo a further great alteration.

After-the-War Transport.

For one thing, the transportation systems of the world will be improved to a vast degree by the employment of aircraft. The limitations of land and sea will disappear in so far as the conveyance of cargo is concerned, and marmalade, for instance, may then proceed swiftly from Dundee to Delhi without changing its means of conveyance on the way. Time will be saved, and when time is saved expenditure of money, too, is reduced.

It is not to be expected that immediately after the cessation of hostilities that shipping, railways, canals, roads, and other existing means of transportation will be replaced to any large degree by the employment of aircraft. The aeroplane and the dirigible are not yet in a sufficiently advanced stage of development to admit of general cargoes being carried over accustomed routes, nor is there a sufficiency of aircraft to undertake any but special work.

In the immediate future, while the production of aircraft remains unduly expensive in relation to the results attained, there would be little gain in conveying cargoes of imperishable hardware from land to land, or in the transportation of passengers of the cheaper sorts to their chosen haunts of pleasure.

Aerial Posts.

Aerial posts can, however, be organised and be brought into operation immediately after the declaration of peace. Speed is in this matter of great importance, and is in itself an economy. Anyone conversant with the performance of modern aircraft can with ease work out possible routes for the aerial post, and satisfy themselves as to the great saving of time made on such journeys as London-Petersburg or London-New York. This increase of speed in the delivery of letters will add a new horror to life, but experience of war has no doubt made the pursuit of horror a perpetual habit in human existence.

Perishable goods, including those articles of food which have enthralled the aldermanic class throughout history, can and will be carried to their destination by aircraft, if ordered by those to whom expenditure on the unimportant in life is a principal joy.

Though at first the conveyance of goods and passengers by aircraft will be limited, the passage of another ten years will see a great development in the new means of transport. All but the most bulky and least perishable of cargoes will travel by the aerial route. The effect on humanity will be great. The minds of the meanest cannot but be broadened by the increased contact with the outer world brought about by the newer swiftness of communication between the more remote nations.

Political Effects.

Politically the effects may be curious. Either the principles of Free Trade will be applied universally, or the almost legendary art of the smuggler will be revived,

and the historic and romantic caves be replaced by carefully camouflaged hangars erected in places of almost ostentatious secrecy. At this point one is able to introduce the subject of the Royal Air Force in peace time.

It is unlikely that Free Trade will become universal for generations. Nations are as instinctively suspicious as are individuals. Each thinks that it has all to lose by Free Trade while the rival has all to gain. Therefore one can safely assume that smuggling will serve as an attractive and lucrative profession for younger sons, retired naval men, and ruined stockbrokers.

Customs barriers are at present difficult to penetrate, for a watch has only to be kept in one plane and along clearly defined frontiers. When aircraft are in common commercial use, the difficulties of those engaged in the prevention of smuggling will be vastly increased. Watch and ward must be maintained over the skies from the ground up to whatever height may be the altitude record of the moment.

A little reflection will show how great a work this must be of necessity. There is nothing to prevent foreign aircraft from landing at any point in the country, save those ports covered by anti-aircraft defences and marked as proscribed areas. If any check is to be placed on the activities of the smuggling community, it will be necessary to maintain a continuous patrol of what may be called on grounds of historic continuity "revenue" aeroplanes.

Customs Dues.

These it is presumed would be supplied by the Royal Air Force and manned by Royal Air Force personnel, as in the past the coastguards drawn from naval sources have undertaken many of the duties common to the prevention of smuggling.

Customs regulations may be drafted to instruct all foreign aircraft crossing the coast to land at any of a series of inspection grounds arranged across such areas as are not closed to flying for military reasons. At these places passengers and cargoes could be examined with the unwearying curiosity of the practised Customs officer. If the statements of the crew and the passengers were proved to adhere closely to truth, the aircraft marked with a Customs seal could then proceed happily to its destination.

The smuggler would naturally avoid these inspection grounds as he would the plague, and instead would endeavour to pass unseen through the patrol to the prepared places of secrecy in the Midlands.

It is obvious that no patrol that it would be possible to maintain, provided it was desired to keep the expense of the prevention of smuggling below the total revenue from imports, could hope to follow all aircraft crossing the coast from abroad. But it would seem possible that "revenue" aeroplanes might single out only such aircraft as neglect to land at the allotted places, and either follow them to their private landing grounds or telegraph to land stations the map reference of the point at which the smuggler alighted.

Such a procedure might not work in practice, but it would seem to be the only available means at hand.

Aerial Coastguards.

Following the analogy of the Coastguard Service, there are other duties which would naturally fall to the coast patrol, and which would be more in keeping with the prescribed military character of the Royal Air Force.

Principal among these would be the detection and prevention of flights over British territory by aircraft of foreign military forces. The common use of aircraft may, as has often been said, replace the customary declaration of war or the mobilisation which gives the first warning of approaching war, by an aerial attack of considerable magnitude directed at points of vital military importance in the scheme of national defence. It is, of course, unlikely that a nation would begin hostilities until mobilisation had been almost, if not altogether, completed, but it is the unexpected which counts in war.

An Insurance.

As adequate preparation and constant vigilance are most important in any scheme of national defence, the patrols of the Royal Air Force undertaking revenue duties would presumably be armed and ready to withstand the first shock of sudden hostilities. An attack by air as a first act of war would necessarily be made in considerable strength, as the initial offensive is valueless unless it is carried out with vigour and determination. Hence the approach of hostile formations or of an unusual number of foreign aircraft (intending, perhaps, to rendezvous at a selected point) would be seen by a vigilant patrol, and an answering concentration could be made rapidly to engage the enemy in what would probably be a hopeless contest, but which would give time for the defences to prepare for the first assault.

The prevention of aerial espionage will be extremely difficult, as there is nothing to prevent other countries from manning their commercial aircraft with military personnel in place of the customary merchant crews. The probable means to be adopted will be to define a series of routes by which foreign aircraft are permitted to enter or to leave the country. In addition, military areas of importance will doubtless be proscribed for flying, except by British military aircraft. The maintenance of these regulations will give constant employment to R.A.F. units in peace-time.

THE ROYAL CANADIAN AIR SERVICE.

According to the "Air Service Journal," New York, Sept. 12th, 1918:—C. C. Ballantyne, Dominion Minister of Naval Service, announced on Sept. 5th the establishment of the Royal Canadian Naval Air Service, and declared that, thanks to America's aid, "machines are flying along the Atlantic coast, ready to bomb hostile submarines, escort convoys, and perform other services."

The United States, he said, had "generously consented to supply the personnel for Canada's Royal Naval Air Service until such a time as a Canadian personnel could be properly trained to take their places."

Also, he said, the United States had supplied the necessary machines, which included aeroplanes, airships, and kite balloons.

LOW FLYING FORBIDDEN.

On Oct. 22nd, Mr. Marriott, having asked whether attention had been called to the number of fatal accidents which had recently occurred at Oxford; and whether, in view of the danger to the civil population, orders would be given that the instructional flights shall be directed over the open country and not over the city, Maj. Baird, in a written reply, said: There have been three fatal flying accidents at Oxford in the past three months. Ordinary flying instruction is given over the Meadows, and strict orders prevail against low flying over the city.

BALKAN CHARM.

Mr. C. Ward Price, writing from British Headquarters in Macedonia on Oct. 18th, says:—

Some of our later returned officer prisoners from Bulgaria have tales of harsher treatment by the Bulgarian Army than those whom I saw at Sofia the other day. A Canadian flying officer said to me to-day:—

After I had tried to escape I was put in prison for 20 days. There was a Turkish deserter in the same cell, and in the corners were piles of human excrement. Other officers were in cells the floor of which was covered with the same filth, and they had to lie in it at night. Once when a prisoner had escaped, the Bulgarian lieutenant who commanded the guard came into our mess, tore the pictures off the walls, broke half the things in the room, and told us in French that he would have us sent to a punishment camp, from which we should not return alive.

[It is well to remember, when matters of this sort arise, that one of our war aims—according to our politicians—is that small nations such as the gentle Bulgars and their other Balkan relations, shall have the right of self-determination—which means the right to do as they please in the most unpleasant manner. —Ed.]


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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Oct. 29th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officers, 2nd Cl.—W. A. Hunter (Capt., Gen. List) is granted a commn as Capt., and to be actg. Maj. while so empld., June 21st; (substituted for notification in "Gazette" Aug. 16th); Capt. R. A. Laws, and to be actg. Maj. while so empld., vice Capt. (temp. Maj.) F. B. Rigby (now decd.), Sept. 26th.

Staff Officers, 3rd Cl.—Capt. A. P. M. Sanders, Aug. 5th; Capt. G. F. Clark, vice Sec. Lt. (temp. Capt.) T. H. McArthur, Oct. 8th; (T) A. W. Dods (temp. Capt., R.A.), and is granted a temp. commn. as Capt., May 23rd.

Staff Officer, 4th Cl.—Sec. Lt. A. O. M. Limb, and to be actg. Lt. while so empld., Oct. 30th.

The following temp. appts. are made :—Col. (Staff).—(Air).—Lt.-Col. (temp. Col.) R. H. Clark-Hall, D.S.O., and to retain his temp. rank while so empld., Aug. 16th.

Staff Officer, 2nd Cl.—(Air).—Capt. H. E. Weaver, and to be actg. Maj. while so empld., Aug. 16th.

Staff Officers, 3rd Cl.—And to be actg. Capts. while so empld. if not already holding that rank :—Lt. M. A. Benjamin, M.C., Sec. Lt. W. Lienard, Aug. 1st; (P) Capt. G. M. Gibbs, May 5th; Capt. W. G. Courthope, Oct. 12th; (T) Sec. Lt. (Hon. Lt.) F. J. W. Humphreys, Sept. 5th.

Staff Officer, 4th Cl. (2nd Gr.).—Lt. L. R. Neville, Oct. 25th.

FLYING BRANCH.—Capts. to be temp. Majs. while empld. as Majs. (A.) :—M. D. Barber, Oct. 8th; (Hon. Maj.) A. M. Miller, D.S.O., Oct. 18th; A. G. Walker, Oct. 23rd.

Capt. E. A. de L. De Ville to be temp. Maj. while empld. as Maj. (A. and S.), Oct. 1st.

Capts. to be Capts. (A) :—H. A. Furniss, from (O), July 13th; C. C. Darley, from (S.O.), Oct. 9th.

Maj. A. O. Westendarp reverts to Capt. (A.) at his own request, Oct. 15th.

Lts. to be temp. Capts. while empld. as Capts. (A.) :—M. H. Butler, May 30th; G. N. McBlain, Oct. 6th; I. Palmer, Oct. 11th; W. J. Mackenzie, Oct. 14th; G. V. Howard, G. A. E. Norgarb, Oct. 15th; H. R. Clarke, T. H. Gladstone, A. C. S. Irwin, P. Kent, Oct. 17th; E. C. Grimes, Oct. 18th; C. Findlay, Oct. 19th; E. A. Burn, J. McDonald, Oct. 21st; G. T. Williams, Oct. 22nd; E. J. Lussier, Oct. 23rd.

Sec. Lt. O. A. P. Heron to be temp. Capt. while empld. as Capt. (A.), Oct. 23rd.

Lt. G. A. King, D.F.C., to be temp. Capt. while empld. as Capt. (O.), Oct. 9th.

Lts. (T.) to be Lts. (A.) :—E. S. Dowdall, Aug. 26; H. E. Haslehurst, Sept. 23rd.

The following Cadets are granted temp. commns. as Sec. Lts. (A.) :—O. R. Allen, W. L. Anderson, J. W. Barrus, W. T. Booth, D. F. Burr, W. McG. Cochrane, J. R. Crocker, R. N. Cunningham, R. W. Cunningham, H. F. Donovan, J. L. Dugan, F. H. Edson, J. H. Findlay, C. L. Foote, B. L. Ford, T. C. Fraser, J. M. Freston, R. Gilruth, D. W. Gracey, J. J. Heney, S. B. Howson, H. R. Hillick, R. Hugo, J. F. Hyde, J. D. Jackson, J. E. Jellison, M. R. Jordon, A. T. Jost, J. A. Lafontaine, C. Lawie, W. E. B. Lyon, A. P. Malone, G. W. Moir, C. W. Morris, E. T. Morris, G. M. Morrison, C. P. McCuaig, E. J. McDougall, W. A. McKinnon, B. O. Oughton, V. P. J. Phillips, S. R. Robertson, L. C. Robinson, J. Robinson, C. Robson, H. M. Ross, A. B. Ryan, P. M. Sangster, H. G. Schoppe, C. J. Schutz, B. A. Shields, F. G. Stafford, L. E. Stone, H. M. Stover, H. H. Street, J. L. Trotman, H. H. Weeks, L. E. Wells, T. H. Wright, P. H. Zealand, Sept. 12th; G. P. Ashcroft, B. S. Ashley, G. T. Beggs, P. V. Bedore, W. J. Boddy, E. H. Bradley, J. A. Burgess, J. McL. Campbell, C. S. Cassey, A. B. Cleveland, H. W. Colgan, F. H. Coppock, R. B. Crawford, R. Davis, L. B. Dixon, E. C. W. Dobbin, W. A. Evans, H. F. Feasel, W. C. Frickelton, L. Galibert, H. C. Glassford, E. B. Goodman, W. Graham, V. A. Grant, S. H. Hagerman, F. E. Hall, L. A. Hunt, G. H. Hunter, H. B. Hunter, G. A. King, A. J. Lacasse, J. P. C. MacLatchy, R. H. Masterman, C. K. McArthur, J. H. McBride, T. J. McGrath, A. M. McMorran, N. L. Neff, S. Pile, S. Playford, W. P. Powers, F. N. B. Proctor, A. Raymond, T. Rockett, L. S. Rowden, G. M. Sampson, L. Smye, J. Seed, L. L. Stanton, A. Strachan, V. H. Summers, R. I. Walker, R. Wilkinson, C. B. Windsor, H. A. Zeats, R. L. Lefebvre, Sept. 19th; H. R. Baker, H. O. Beattie, E. E. Bennett, J. Bill, Z. J. Bissonnette, J. M. Brett, W. C. Campain, G. H. Campbell, E. W. Chess, A. K. Colley, C. De La Vergne, S. P. Fall, P. L. Fannen, H. F. Gates, A. W. Hardy, R. T. Henley, C. A. Hinsperger, L. A. Holley, E. A. Hunt, A. O. Innis, A. J. Jones, S. F. S. Jones, P. Keeley, F. C. Manderson, D. X. Marks, O. M. Murphy, D. A. McCuaig, J. G. McEntyre, A. E. McNicoll, R. F. D. Parker, B. D. Passow, F. A. Porter, J. E. Roberts, G. J. D. Ryan, C. W. Smallbone, E. P. Smith, H. C. W. Smith, F. V. Sutton, H. W. Sutton, C. L. Tait, E. R. Thom, V. A. Tozzi, W. K. V. Ness, A. T. Wood, N. Fahey, Sept. 26th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—J. Pritchard, C. W. Calder, W. Jeffries, W. D. Melluish, Oct. 14th; E. W. G. Henstridge, J. H. Mallam, D. Welsh, L. K. Clark, M. S. Hale, Oct. 15th; G. A. Johnsson, J. B. Pearson, A. J. Broadberry, R. Newton, E. Havers, M. N. Ireland, Oct. 16th; E. Arnold, A. L. Cormie, Oct. 17th.

The following are granted temp. commns. as Sec. Lts. (A. and S.) :—Prob. Flt. Officer W. Harmston, May 17th; A. S. Cowlishaw, Sept. 26th. Prob. Flt. Officer S. M. Morris is granted a temp. commn. as Sec. Lt. (A. and S.), June 14th (substituted for notifications in "Gazette," July 30th and Aug. 9th).

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—J. A. Griffin, Aug. 3rd; C. A. Milner, Aug. 23rd; J. A. P. Hunt, Sept. 21st; C. J. Pybus, Sept. 28th; H. E. Crosby, Oct. 18th; J. R. Stephens, A. J. Russell, T. E. H. P. Kennedy, H. S. Mills, O. K. Kantback, B. T. P. O'Brien, H. T. Long, R. G. Lamplough, Oct. 26th.

The following are granted temp. commns. as Sec. Lts. (K.B.) (substituted for notification in "Gazette," Oct. 15th) :—D. McK. Dinwiddie (temp. Capt., R.E.), and to be Hon. Capt., Sept. 10th; L. F. Edwards (Lt., Essex R., T.F.), and to be Hon. Lt., Sept. 17th; J. S. Maguire (Lt., N. Staffs. R., Spec. Res.), and to be Hon. Lt., J. C. McIlroy (Lt., R.F.A., T.F.), and to be Hon. Lt., W. Seagram (Sec. Lt., R.F.A., Svec. Res.), H. S. Openshaw (temp. Capt., E. Surr. R.), and to be Hon. Capt., J. F. Swindells (Lt., Ches. R., T.F.), and to be Hon. Lt., Sept. 25th.

L. C. Spaven (temp. Sec. Lt., R. W. Kent R.) is granted a temp. commn. as Sec. Lt. (K.B.), Sept. 14th (substituted for notification in "Gazette," Oct. 11th).

C. Swann is granted a temp. commn. as Sec. Lt. (K.B.), Sept. 20th.

Sec. Lt. G. Tiplady (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (Obsr. Officer), Oct. 25th.

Prob. Obsr. Officer D. L. Brocklesby is granted a temp. commn. as Sec. Lt. (Obsr. Officer), April 2 (substituted for notification in "Gazette," April 26th).

C. S. C. Hunter is granted a temp. commn. as Sec. Lt. (Obsr. Officer), Oct. 21st.

The following Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—V. B. Bedell, M. G. Haight, T. A. Johnston, C. O. L. Jones, A. C. McLean, F. Michols, W. E. Ross, A. H. Smith, A. C. Stronge, G. E. S. Thompson, W. R. Usher, F. P. Walker, A. H. Wilkinson, Sept. 12th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—E. V. G. Stock, R. R. Edward, C. T. R. John, Oct. 25th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (S.) :—F. C. Marriott, Oct. 14th; A. Roberts, H. V. Askham, Oct. 16th.

Sec. Lt. A. Rigamonti relinquishes his commn. on ceasing to be empld., April 8th.

Sec. Lt. E. H. Carlisle is dismissed from His Majesty's service by sentence of a Gen. Court-martial, Oct. 3rd.

Capt. H. H. James relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Oct. 30th.

Lt. D. Leishman relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Oct. 30th.

Lt. W. B. Macdonald (Can. Local Forces) relinquishes his commn. on account of ill-health caused by wounds, Oct. 30th.

The surname of Lt. (temp. Capt.) J. S. Harvey is as now described, and not Hervey as in "Gazette," Oct. 18th.

The surname of Lt. (temp. Capt.) G. W. Dowding is as now described, and not Dowling as in "Gazette," Sept. 20th.

The notifications in "Gazette" of Sept. 27th and Oct. 8th concerning Sec. Lt. W. L. P. Gould are cancelled.

The notification in "Gazette," Oct. 15th, concerning Sec. Lt. T. U. J. Nicholas is cancelled.

The surname of Flt. Cadet D. A. Allan is as now described, not Allen as in "Gazette," Sept. 24th.

The surname of Flt. Cadet H. M. Laing is as now described, not Lang as in "Gazette," Sept. 17th.

The surname of S. F. Morrissey is as now described, and not as in "Gazette," Oct. 15th.

The surname of H. P. Valintine is as now described, and not as in "Gazette," Oct. 11th.

The initials of B. H. Clarke are as now described, and not as in "Gazette," Oct. 15th.

The name of L. C. S. Delapena is as now described, and not as in "Gazette," Oct. 15th.

The initials of N. H. Leach are as now described, and not as in "Gazette," Oct. 11th.

The name of Frederick Lorne Hutchison is as now described, and not as in "Gazette," Aug. 9th.

The notifications in "Gazette," July 30th, concerning the following Officers are cancelled :—F. F. Smith, F. L. Hutchison, A. J. Reith, H. A. Lye, G. K. Waterhouse.

The notification in "Gazette," Oct. 11th, concerning D. L. Brocklesby is cancelled.

The dates of appt. as Sec. Lts. (A. and S.) of the following are as now stated :—W. J. Penningroth, May 24th; A. J. Cleare, June 15th.

ADMINISTRATIVE BRANCH.—Lt.-Col. K. G. Cherry, M.C., to be temp. Lt.-Col., from (A.), Oct. 3rd.

To be temp. Majs. whilst empld. as Majs. :—Lt. (temp. Capt.) G. E. Morris, Aug. 21st; Sec. Lt. (temp. Capt.) F. Waldron, Oct. 3rd.

Capt. R. D. Clinch to be Capt., from (A.), Sept. 2nd.

Lts. to be temp. Capts. whilst empld. as Capts. :—J. G. Lumsden, April 1st; H. Tilley, June 1st; (Hon. Capt.) H. W. Banbury, C. Baines, from (O.), Aug. 1st; S. G. K. Rapley, Sept. 14th.

Lts. (from (T.) to be temp. Capts. whilst empld. as Capts. :—F. N. Downey, W. F. Fletcher, S. N. Veitch, Aug. 1st.

Sec. Lts. (from T.) to be temp. Capts. whilst empld. as Capts. :—K. Draco, (temp. Lt.) R. C. Sugars, (temp. Lt.) G. R. A. Syfret, Aug. 1st.

Sec. Lts. (temp. Lts.) to be temp. Capts. whilst empld. as Capts. :—J. H. Lytle, Aug. 28th; F. McRae, Oct. 16th.

The following are granted temp. commns. as Capts. :—T. L. Forbes (Capt., Lond. R.), April 1st; F. V. Cowell (late Lt., R.N.V.R.), Sept. 2nd.

The following are granted temp. commns. as Lts.:—L. T. G. Jefferson (Lt., Durh. L.I.), Sept. 30th; R. W. Rea, Oct. 21st; M. E. Leeb (late Capt., N. Lancs. R.), and to be Hon. Capt., Oct 23rd.

Lts. (A.) to be Lts.:—J. F. V. Rider, Aug. 27th; S. H. Ellis, Oct. 6th; F. A. Mildred, M.C., Oct. 11th.

Lt. H. F. Fuller to be Lt., from (K.B.), Sept 30th.

Lts. (O.) to be Lts.:—R. B. Bond, I. S. Thomas, Oct. 2nd; J. J. Ironmonger, Oct. 3rd

Lts. (T.) to be Lts.:—A. N. Mercer, Aug. 13th; M. Jacks, Oct. 8th.

Sec. Lts. to be temp. Lts. whilst empld. as Lts.:—H. W. Croft, (Hon. Lt.) T. Mumford, Aug. 1st; (Hon. Lt.) F. McRae, Sept. 16th.

Sec. Lts. (from T.) to be temp. Lts whilst empld. as Lts.:—C. P. Douglas, W. F. M. Hopkins, (Hon Lt.) F. D. Owen, Aug. 1st; (Hon. Capt.) F. C. Marsh, Oct. 1st

The following are granted temp. commns as Sec. Lts., and to be temp. Lts. whilst specially empld.:—S. A. Farr, Oct. 4th; J. McNeil (Capt., Ret. List), and to be Hon. Capt., Oct. 21st; J. A. Plunkett, Oct. 23rd; D. J. Evans, Oct. 26th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—W. O'Donoughue, April 1st; A. J. F. Critchel, Oct. 1st; A. H. Johnston, F. S. Willsie, Oct. 21st.

Prob. Flt. Officer W. G. Illingworth (late R.N.A.S.) is granted a temp. commn. as Sec. Lt., Sept 14th. (Substituted for notification in "Gazette," Sept. 20th.)

The following are granted temp. commns. as Sec. Lts.:—A. Chalk (temp. Lt., Labour Corps), and to be Hon. Lt., April 12th; H. Silvester, W. A. Westley, July 1st; F. E. Rayner (temp Sec. Lt., attd. Middx R.), July 26th; C. Fenn, Oct. 1st, E. A. Malcolm, and to be Hon. Lt., C. J. Young, Oct. 10th; A. H. Allen, R. F. Wilson, P. R. Williams, T. Wright, G. C. Harrison, E. G. Pugh, H. T. Savage, J. Aitchison, S. Calam, A. J. Cook, J. J. Hegan, E. S. Olney, A. J. Penalma, P. J. Rixon, A. Sowdon, F. W. Turner, A. M. Watters, J. Weeks, E. W. Barton, H. S. Barton, J. Brereton, A. R. N. Challacombe, E. B. Cooke, S. T. Fowler, F. C. Gibson, E. H. Hughes, W. J. Lawrence, H. D. Olson, H. R. Stubbington, J. A. Squire, J. T. Histed, J. Macpherson, H. Miller, Oct. 13th; W. H. Carling, Oct. 19th; Prob. Flt. Officer W. O. Watt, Oct. 21st; E. S. De Pass, H. G. Gasson, Oct. 22nd; I. F. A. Klapper (late Sec. Lt., S.A. Forces), A. F. Stevens (late Sec. Lt., R.A.F.), C. E. Eastwood, H. W. Gallagher, J. H. P. Kither (late Sec. Lt., R.F.C., Gen. List), B. O. Willis (Hon Lt., late Dorset R.), and to be Hon. Lt., D. A. Boltou, A. E. De Gruchy, A. Todd, E. Ackroyd, W. B. Barr, C. W. Brown, H. D. Arrowsmith, T. D. Barnes, A. Beattie, F. W. Beaumont, E. C. Birkett, H. G. Bishop, J. I. C. Boger, C. R. Booth, B. Bosker, C. G. Bray, F. C. Brooke-Hunt, A. Brownhill, A. H. Burn, D. Cairn, F. W. Corbett, T. F. Coppinger, N. Critchley, G. Crouch, F. W. T. Davis, D. Dawson, R. E. B. Denton, A. A. M. Durrant, A. T. Egerton-Savory, H. Elsee, W. H. Evans, S. M. Falconer, J. Flett, V. A. Frankish, J. P. Foxwell, W. G. Galloway, L. Garerd-Hill, D. W. Genge, W. R. Glossop, H. W. Gray, C. H. Green, G. E. Harvey, W. Hawksworth, F. S. Heywood, H. F. Hickey, A. H. Hollingdale, G. R. Hunt, F. W. Heazell, F. Ingalton-Drake, H. A. Kauper, D. Mason, G. E. C. Maconchy, L. C. Maitland, H. J. G. Male, W. Marklew, J. C. McNaught, C. Measures, P. A. P. Monaghan, D. Morton, J. E. Neary, G. B. Newton, W. W. Pigott, W. F. F. Prins, C. F. Rathbone, J. Sharpe, J. K. Small, H. T. Stansmore, D. T. Stewart, O. W. Stokes, T. E. Taylor, D. C. Thomas, G. Thomas, J. G. Thompson, J. K. Thomson, S. S. Tremayne, G. C. Tozer, A. E. Turner, W. F. D. Welch, R. G. Wilkinson, J. D. Williams, A. W. Yardley, H. J. Youdon, W. H. Stow, E. Aldwinckle, Oct 25th; N. S. Beale (Hon Lt., late East Surr. R.), and to be Hon Lt., F. C. Catchpole, W. G. Long, Oct. 26th.

The following relinquish their commns. on ceasing to be empld.:—Maj. H. J. Flower, D.S.O., M.C. (Maj., K.R.R.C.), May 22nd; Capt. M. D. Colbourne (Capt., R. Berks R.), Aug 28th; Maj. S. Hutcheson (Maj., Ind. Army); Capt. L. A. Walton, D.S.O., M.C. (Capt., Welsh R., attd.), Oct. 14th; Lt. E. H. Molme (temp. Lt., Rif. Brig., attd.), Oct. 18th.

Sec. Lt. J. S. Johnstone relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Oct. 30th.

Sec. Lt. J. H. McGregor relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Oct. 30th.

Sec. Lt. N. W. Wise (Sec. Lt., R.F.A., Spec. Res.) relinquishes his commn. on acct. of ill-health, Oct. 30th.

Sec. Lt. W. P. G. S. McHutchen resigns his commn., Oct. 30th.

The date of appt. of Lt. G. B. Booth, notified in "Gazette," Oct. 15th, is Sept. 21st.

Technical Branch.—Capts. to be temp. Majs. while empld. as Majs.:—P. H. Linthune, June 21st; J. C. Watson, from (Ad.), Aug. 6th; A. Hunter, Sept. 25th; R. Whiddington, Oct. 16th.

The following Capts. (temp. Majs.) relinquish the appts. as S.O., 2nd Cl.; and retain the temp. rank of Maj. while empld. as Majs.:—R. McPhail, Sept. 25th; J. E. Arrol-Hunter, Oct. 2nd.

Lts. to be temp. Capts. (without the pay and allces. of that rank) while empld as Capts.:—H. H. Greig, Sept. 9th; C. J. Miln, Oct. 5th.

Sec. Lts. to be temp. Capts. while empld. as Capts.:—(Temp. Lt.) H. G. Wood, Sept. 8th; (Hon. Capt.) C. B. Dick-Cleland, Sept. 18th; R. McL. Freemantle, Sept. 30th.

R. K. Paton (temp. Capt., Gen. List, New Armies) is granted a temp. commn. as Capt., Oct. 7th.

Lts. (A.) to be Lts.:—C. B. D. Campbell, C. A. Pierpoint, Sept 16th; M. Platt, Sept. 26th; A. R. Hungerford, T. A. Roberts, G. W. Wilkin, Oct. 7th; B. S. S. Rockey, Oct. 10th.

Lt. A. D. K. Craig to be Lt., from (Obsr. Officer), Sept. 25th.

Sec. Lt. (temp. Lt.) T. Honnor retains the temp. rank of Lt. while empld. as Lt., from (Ad.), Aug. 16th.

Sec. Lts. to be temp. Lts. while empld as Lts.:—(Hon Lt.) G. R. Kull, July 11th; L. J. Lester, Sept. 30th; (Hon. Lt.) V. Hermann, Oct. 7th.

Sec. Lts. (temp. Lts.) (Admin.) to be Sec. Lts., and to be Hon. Lts.:—A. Crook, C. A. Assiter, L. H. Bainton, Aug. 26th; W. J. Root, Aug. 30th; G. D. G. Hake, H. D. Stanniar, R. N. Tweedy, Sept. 2nd; J. F. Alexander, O. C. Lees, Sept. 9th; J. O. Miles, Sept 16th.

Sec. Lts. (Ad.) to be Sec. Lts.:—J. S. Hilton, July 13th; T. Covell, Aug. 26th; J. A. Moore, Sept. 2nd; G. Probert, Sept. 5th; R. C. Hill, Sept 9th; H. E. Haddon, Sept. 16th; W. E. Andrews, Sept. 23rd; A. F. Woods, Sept. 26th; J. Rowley, Oct. 3rd; D. Cameron, Oct. 4th; L. A. Briggs, W. Cox, P. C. Ingram, H. C. Martin, A. Musgrove, H. J. Neill, H. W. Turton, C. R. Tweeddale, E. G. Barnard, H. D. Chalke, P. Webster, Oct. 5th; E. J. Brookes, J. S. Forde, A. H. M. Jacoby, T. G. Knowles, R. E. Sharples, A. T. Walsh, Oct. 7th; V. W. G. Day, H. A. Smith, Oct. 9th; W. Wilcock, L. H. S. Hardy, Oct 10th; R. M. Balston, Oct. 16th

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. E. H. Dering, Sept. 8th; J. A. Edge, Sept. 25th; W. A. Todd, Oct. 9th.

Sec. Lt. C. B. Maddocks (late R.F.C., Spec. Res., on prob.) is confirmed in his rank as Sec. Lt., Oct. 4th.

H. H. Fell is granted a commn. as Sec. Lt., Aug. 21st (substituted for notification in "Gazette," Aug. 20th).

The following are granted temp. commns. as Sec. Lts.:—A. N. Pictor (Lt., Som. L.I., Spec. Res.), and to be Hon. Lt., Aug. 16th; J. R. Cross (temp. Sec. Lt., R.E.), Sept. 7th; G. H. Lounsbury (Capt., New Brunswick R., C.E.F.), and to be Hon. Capt., Sept. 23rd; V. L. Henwood (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Oct. 3rd; F. Meizner (temp. Lt., New Armies, Gen. List), and to be Hon. Lt., Oct. 5th; W. Dow (Lt., R.F.A., T.F.), and to be Hon. Lt., Oct. 6th.

The following relinquish their commns. on ceasing to be empld.:—Capt. W. C. C. Sykes (Lt., R.N.V.R.), Oct. 17th; Lt. W. G. Coleman, Oct. 18th.

The initials of V. W. Pearson are as now described, and not as in "Gazette," Oct. 8th.

The notification in "Gazette," Aug. 27th, concerning Lt. (temp. Capt.) A. W. Phillips, M.C., is cancelled.

The notification in "Gazette," Oct. 11th, concerning Capt. W. Brass is cancelled.

Medical Branch.—H. Greenwood (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., Oct. 1st

The following are granted temp. commns. as Lts.:—D. Cromie, H. Hilliard, W. Inman, Oct. 25th.

The initials of Capt. W. T. Williamson are as now described, and not as in "Gazette," Oct. 8th.

Dental Branch.—B. G. Kechnie is granted a temp. commn. as Lt., Oct. 25th.

Memoranda.—W. G. Adams is granted a temp. hon. commn. as Sec. Lt., and to be temp. Hon. Capt. whilst holding a special appt. under the Ministry of Munitions, May 1st

Sec. Lt. R. E. F. L. Bristow to take rank and prec. as if his appt. as Sec. Lt. bore date Sept. 24th

Lt.-Col. J. A. H. Gammell, D.S.O., M.C. (Capt., R.A.), relinquishes his commn. on ceasing to be empld., Oct 21st.

H. C. Belore (late Sec. Lt., R.A.F.) is granted the hon. rank of Sec. Lt., July 27th.

E. H. Bishop (late Lt., R.A.F.) is granted the hon. rank of Lt., Aug. 17th

War Office, Oct. 31st.

REGULAR FORCES. Establishments.—R.F.C.—Mil. Wing.—The undermentioned appt. is made:—Schools of Instrn.—School of Technical Training.—Co. Comdr. (Graded as Equipt. Officer, 2nd Cl.)—Temp. Lt. F. B. Bayly, A. Cyclist Corps, to be transfd. to R.F.C., Gen. List, and to be temp. Capt. (without the pay or allowances of that rank) whilst so empld. Feb. 13th, 1918. (Substituted for the notification in the "Gazette" of March 11th, 1918.)

Air Ministry, Nov 1st.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Asst. Dir. (graded for purposes of pay as S.O. 1).—F. Cookson (temp. Capt. R.E.), is granted a temp. commn. as Capt., and to be actg. Lt.-Col. while so empld., April 1st.

Staff Officer, 2nd Cl.—Maj. H. J. Newton-Clare, Oct. 21st.

Staff Officer, 3rd Cl.—(T.).—F. Spencer (temp. Capt., York. and Lanc Regt.), and is granted a temp. commn. as Capt., June 22nd.

Staff Officer, 4th Cl.—Lt. J. Duncan, July 20th

The following temp. appts. are made:—Group Comdr.—Maj. (actg. Lt.-Col.) E. R. C. Nanson, D.S.C., and to be actg. Col. while so empld., Oct. 25th

Staff Officer, 2nd Cl.—(Air).—Lt. (actg. Capt.) Hon. H. R. Knatchbull-Hugessen, M.C., and to be actg. Maj. while so empld., vice Capt (actg. Maj.) J. Selwyn, who relinquishes the actg. rank of Maj., Oct. 11th.

Staff Officers, 3rd Cl.—And to be actg. Capts. while so empld., if not already holding that rank:—Lt. J. L. Denman, Sept. 18th; Sec. Lt. (actg. Lt.) R. J. Whiteley, Oct. 1st; Capt. N. C. F. Francis, vice Lt. (actg. Maj.) Hon. M. H. R. Knatchbull-Hugessen, M.C., Oct. 11th); (Q.).—W. Ricketts, Oct. 5th

Staff Officers, 4th Cl. (2nd Gr.).—Lt. A. G. Baker, Lt. E. M. Smith, Oct. 8th; Sec. Lt. R. Davis, and to be actg. Lt. while so empld., Oct. 17th; Lt. J. C. Nairn, Oct. 23rd

Flying Branch.—Maj. L. A. Pattinson, M.C., D.F.C., to be actg. Lt.-Col. while empld. as Lt.-Col. (A.), Oct. 21st.

Capts. to be actg. Majs. while empld. as Majs. (A.):—H. A. Smith, M.C., Oct. 11th; C. S. Morice, M.C., Oct. 14th.

Capt. M. A. Simpson to be actg. Maj. while empld. as Maj. (A. and S.), Aug. 23rd (substituted for notification in "Gazette," Sept. 6th.

Maj. S. T. Dockray to be Maj. (K.B.), from Tech., Sept. 22nd.

Lts. to be actg. Capts. while empld. as Capts. (A.):—F. V. Robinson, Sept. 1st; J. W. Crane, Oct. 3rd; H. Axford, D.F.C., H. A. S. Molyneux, Oct. 7th; E. E. Showler, Oct. 8th; G. S. Peffers, L. B. Rochester, Oct 18th; D. Grinnell-Milne, Oct. 21st; W. Hubbard, Oct. 25th.

Lt. C. T. Anderson to be actg. Capt. while empld. as Capt. (O.), Oct. 22nd.

Lts. to be Lts. (A.), from (Obsr. Officers):—H. A. Lovett, Oct. 6th; C. R. H. Firth, Oct. 9th; T. E. Rogers, Oct. 16th.

Sec. Lt. (Hon. Lt.) W. Coker to be actg. Lt. while empld. as Lt. (K.B.), Oct. 24th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.):—H. W. Evans, July 28th; N. Price, Aug. 30th; J. E. Mufty, Sept. 22nd; P. Harris, Oct. 1st; R. A. Whitehead, Oct. 2nd; J. M. Bacon, Oct. 3rd; H. E. Talbot, J. Burton, E. G. F. Salmon, Oct 4th; W. Narburgh, T. F. Reading, S. P. Watts, Oct. 5th; T. D. Watson, Oct. 6th, D. MacDougall, Oct 7th; F. Whiskin, Oct. 8th; R. R. Macdonald, A. D. M. Blair, T. S. Platten, G. Dignam, Oct. 11st; W. F. H. Parish, J. B. Eberts, Oct. 12th; W. T. Armstrong, F. G. Clarkson, Oct. 13th; F. T. Parr, P. Anderson, H. T. Yearley, E. A. Grant, A. C. Marsh, Oct. 14th; G. Hall, Oct. 16th

The following are granted temp. commns. as Sec. Lts. (A.):—C. A. Spence (Sec. Lt., R.A.F., Spec. Res.), Sept. 29th; C. R. Gladish (temp. Sec. Lt., Notts. and Derby. R.), W. G. Stewart (Lt., R. Scots T.F.), and to be Hon. Lt., Oct. 1st, J. F. A. H. Lindsay, D.C.M., M.M. (Lt., Sask. R., C.T.F.), and to be Hon. Lt., Oct. 2nd); W. C. Rowell (Capt., N. Lanc R.), and to be Hon. Capt.; A. Beck (temp. Sec. Lt., S. Lan. R.), Oct. 3rd; C. J. Swatridge (Lt., Notts. and Derby R.), and to be Hon. Lt.; C. A. Allen (Sec. Lt., Northd. Fus., T.F.); A. B. Whiteley (Sec. Lt., Bord. R., Spec. Res.), Oct. 4th); A. G. Imlay (Lt., B. Columbia R., C.E.F.), and to be Hon. Lt.; E. E. J. Shiner, M.C. (Lt., R.F.A., T.F.), and to be Hon. Lt., Oct. 5th; A. C. Beard (Sec. Lt., High. L.I., T.F.), Oct. 7th; G. S. Astley (Lt., K. Lpool R., T.F.), and to be Hon. Lt., Oct. 8th; F. G. Gardiner (Lt., C. Ontario R., C.E.F.), and to be Hon. Lt.; G. Highton (temp. Sec. Lt., R. Lanc. R.), Oct 10th; J. N. Gladish (temp. Sec. Lt., Notts. and Derby. R.), F. G. Lake (temp. Sec. Lt., R. Suss. R.), Oct. 12th; L. F. Homer (temp. Sec. Lt., Worc. R.), Oct. 16th; J. Dunbar, Lt., Gord. Highrs., T.F.), and to be Hon. Lt., Oct. 17th

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—E. Beardsworth, July 14th; W. B. Tretheway, Aug. 13th; P. G. Greenslade, H. J. Armstrong, J. O'B. Bagnall, R. P. S. Davidson, Oct. 1st; O. J. Stevenson, H. M. Stringer, Oct. 3rd; W. R. Allin, A. Grimshaw, Oct. 5th; J. Y. Moggridge, Oct. 7th; L. J. Williams, Oct. 8th; N. E. Smith, Oct. 10th; P. R. Tingley,

(Continued on Page 1719.)

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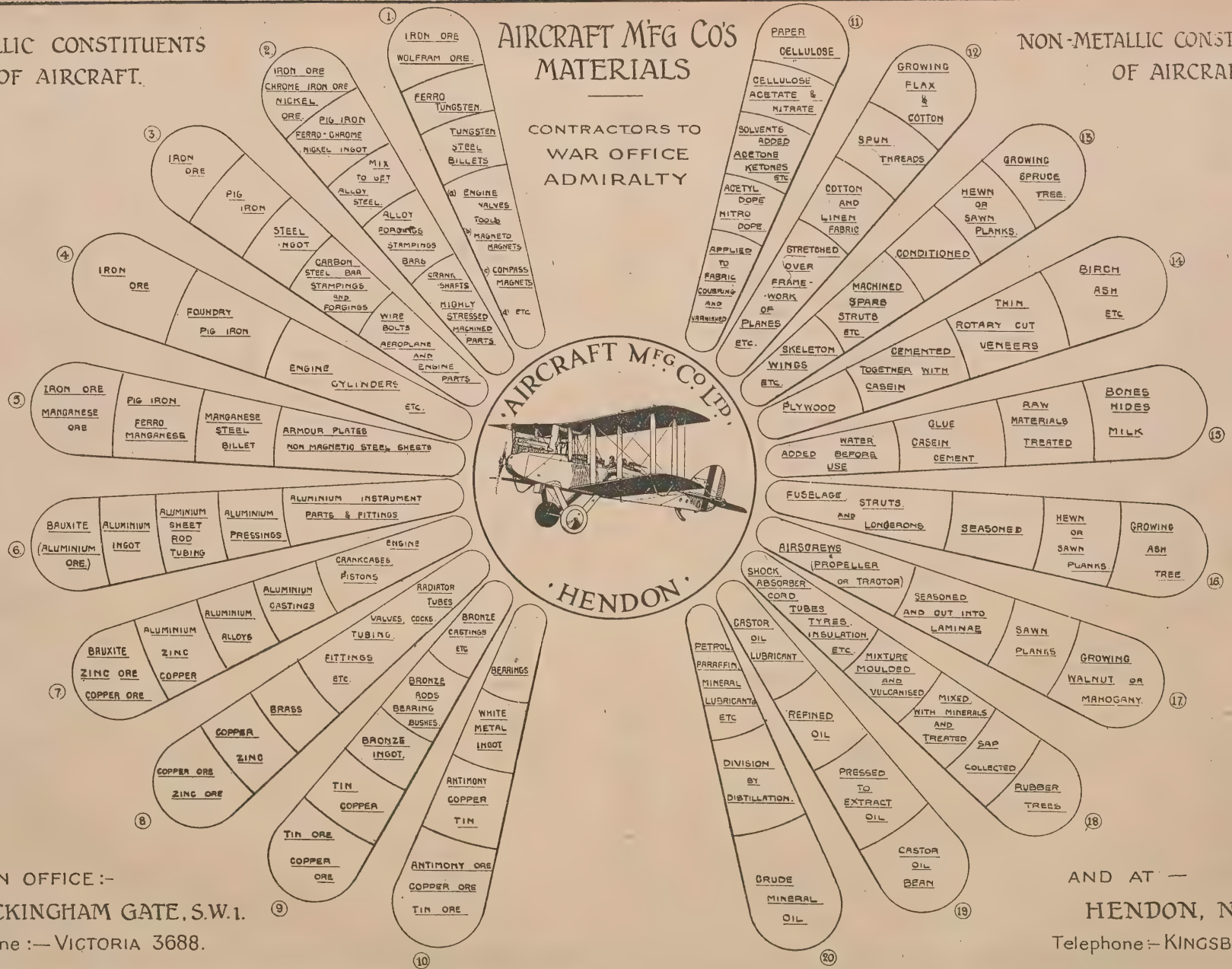
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THE DORAND RECONNAISSANCE BIPLANE.

"Flugsport" for Aug. 14th describes the Dorand biplane, explaining that this machine is known as "A.R." or "A.L.D.," according to its equipment with a Renault or a Lorraine-Dietrich engine. The machine described, naturally one captured from the French, bears the description, "A.R.," and the number 309. The letter "A" indicates that it is a reconnaissance machine.

The fuselage of the machine is placed between the two inner pairs of interplane struts, there being two other pairs of struts on either side. There is no separate cabane.

The Wings.

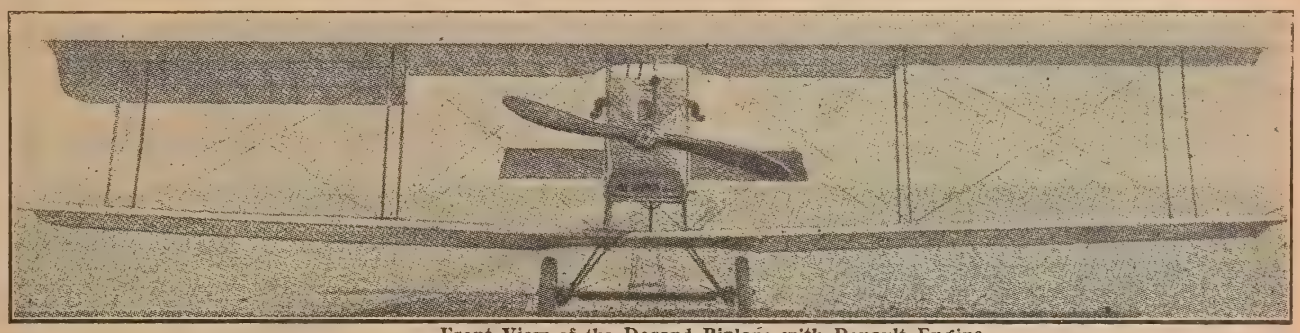
Both planes are 13.3 metres in span, and a semi-circular piece is cut from the centre of the trailing edge of each.

The lower wings are swept back 1 deg., and have a dihedral angle of 2 deg. The upper wings are perfectly straight, but are staggered backwards 0.5 m. The gap varies from 2 m to 1.825 m., representing at the widest part 0.945 of the chord.

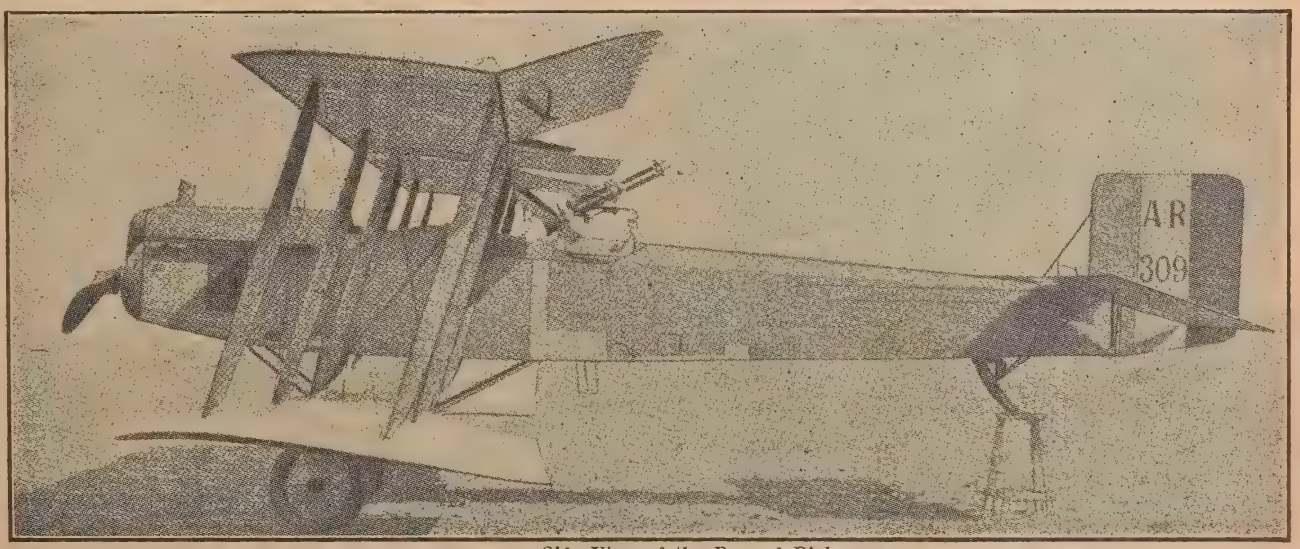
The two halves of the planes are screwed together at their junction in the middle line of the aeroplane. The spars appear to be "I" shaped, and to be on both sides covered with plywood. Between each two ribs, the distance of which amounts to 300 to 340 mm., one auxiliary rib is arranged on the upper side, reaching from the leading edge to the main spar. The yellow-white coloured fabric is sewed to the ribs. The trailing edge consists as in the case of all French aeroplanes, of a wire, and is provided with hooks and eyes.

The hollow interplane struts are drop-shaped in section, and are made of spruce, with the exception of those screwed to the fuselage. To prevent side-bending the inner sides of the other struts have a special king-post and cable support. The spar stampings are of very simple construction. Strut sockets of sheet-steel are held by "U" shaped wire guards, the two legs of which penetrate the wing spar, and end with screws below. Load-carrying and landing wires hug the corners of this guard, while lugs for the fixing of the incidence bracing are arranged upon the strut sockets without further fastening.

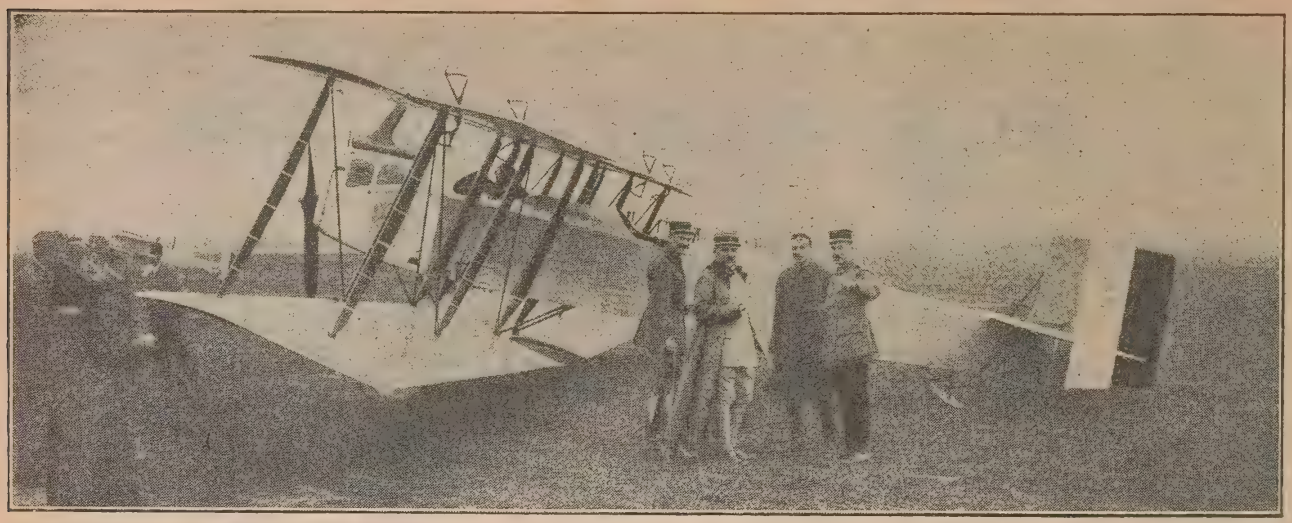
The wiring between the struts consists exclusively of single wires that are connected in the usual earlier way with the stampings and turnbuckles by bending and threading through spiral wire-holders. The load-carrying wires lie double behind each other. The interstice is filled out by a wooden fairing. The safety drift wire running forwards to the body is wound with a thin string, to prevent any damage of the airscrew by a possible breakage.



Front View of the Dorand Biplane with Renault Engine.



Side View of the Dorand Biplane.



Reproduced from a French Photograph.

A Three-Quarter Rear View of a Dorand Biplane.

Between the fuselage and the lower plane a diagonal wiring is arranged in line with each spar. As corresponding wiring is, however, lacking above, the upper ends of the struts attached to the body bend much by any movement of the planes.

Unbalanced ailerons are attached to the upper planes behind the rear spar. The control cables run single from the chain-wheel over two rollers in the lower planes to further direction changing ones and therefrom as wires of 2½ mm. thickness to the quadrant levers. The upper sides of the ailerons are interconnected by means of a cable and wire control running over the upper planes.

The Tail Planes.

To the rear end of the fuselage a narrow fixed tail plane is attached and corresponds on both sides with the balanced elevators of trapeze shape. The rudder is balanced, too. The bearings of the rudder and elevators are reinforced to the body by struts of streamline tube. The ends of these tubes are hammered flat and fixed with bolts to the stampings. There is no fin. The control cables are formed of single wire 2½ mm. thick; only where running over rollers cables are arranged.

The Undercarriage.

The landing gear is attached underneath the lower plane to the ends of the central interplane struts, being supported by streamline tubes forwards and backwards along the fuselage. The one-piece axle rests between two auxiliary steel tube shafts, screwed to the struts. There is no limitation of the spring action. There is diagonal wiring in both strut levels.

The Fuselage.

The fuselage longitudinals and struts are of ash till the observer's seat, behind thereof of spruce; the body is fabric-covered. The struts of the back part of the fuselage rest on the longitudinals without further fastening, and are only kept in position by straining of the fuselage wiring. To prevent sliding they are on the front sides provided with cross-formed keys, into which the thin stampings embracing the longitudinals fit.

The Power Plant.

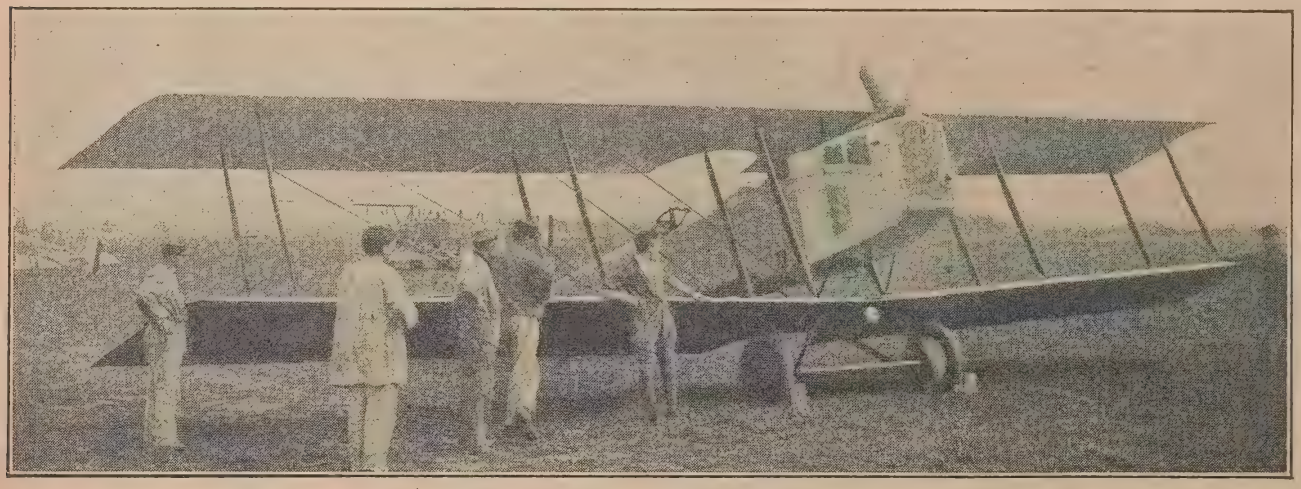
The performance of the 8 cyl. Renault engine of V-type is, according to a label in the pilot's cockpit, 190 h.p. at 1,500-1,600 r.p.m. The front radiator with blinding arrangement is placed between the body and the lower planes. A water-collector lies above the left row of cylinders. The exhaust is led outwards through small collectors to both sides of the fuselage. In the old motors the exhaust was led inwards and then by a common collector over the upper planes, which arrangement badly influenced the range of visibility of the pilot. In these aeroplanes the radiator formed the front part of the fuselage. Further, there was a second auxiliary radiator under the body.

The motor is screwed under two bearers of "U" streamlined steel, which rest forward and behind on strong-pressed sheet-steel frames. Close behind, the oil tank, of 7 litres capacity, lies crosswise. A main petrol tank, divided in three compartments, and containing 170 litres, is arranged behind the pilot's seat. Therefrom the petrol is forced by means of a pump, operated by the motor, or by the hand-pump, provided at the right of the pilot's seat, into a small gravity tank of 12 litres capacity, lying behind the motor. Any excess supply is returned to the main tank.

The position of the pilot is exactly below the leading edge of the upper planes. His field of sight forwards is good, but very limited backwards.

The Instruments.

On the instrument board in front of the pilot's seat is arranged:—a thermometer for the cooling water, the magneto switch, compass, petrol stop cock and tachometer. To right of the seat is the petrol hand-pump with a three-way cock, as well as an adjustment for a rubber spring on the control cable of the elevator.



Reproduced from a French Photograph.

A Three-Quarter Front View of a Dorand Biplane.

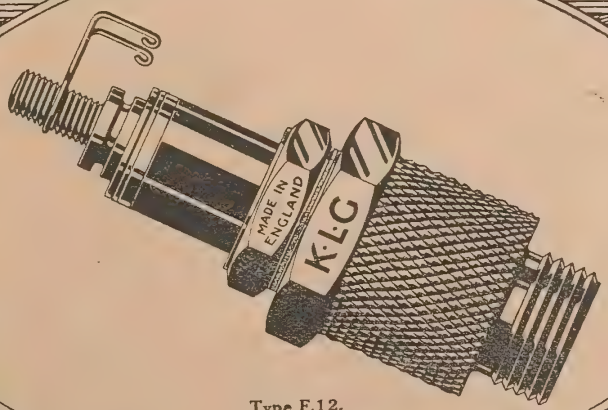
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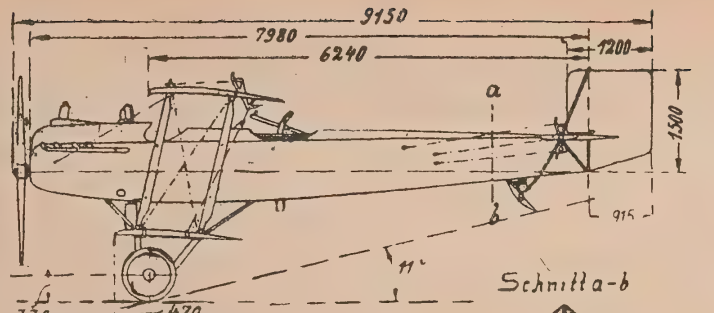
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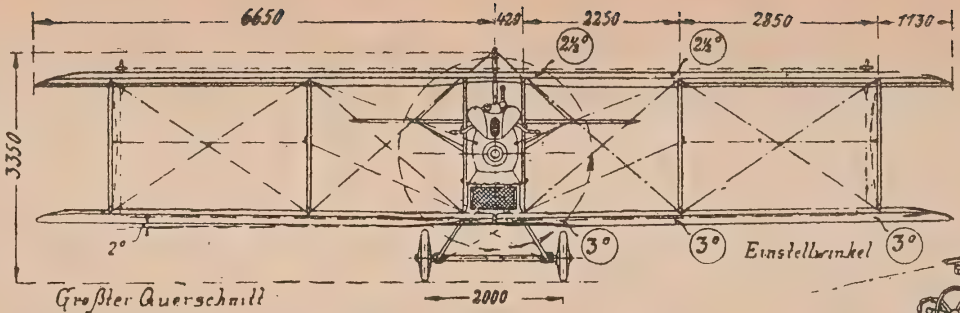
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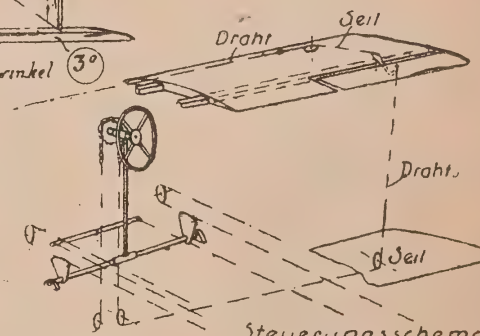


Großter Querschnitt

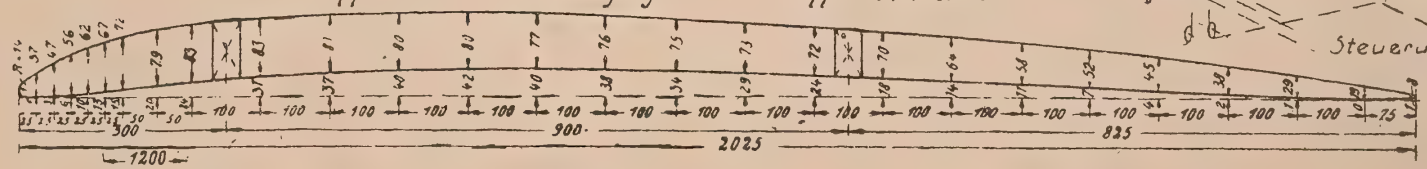


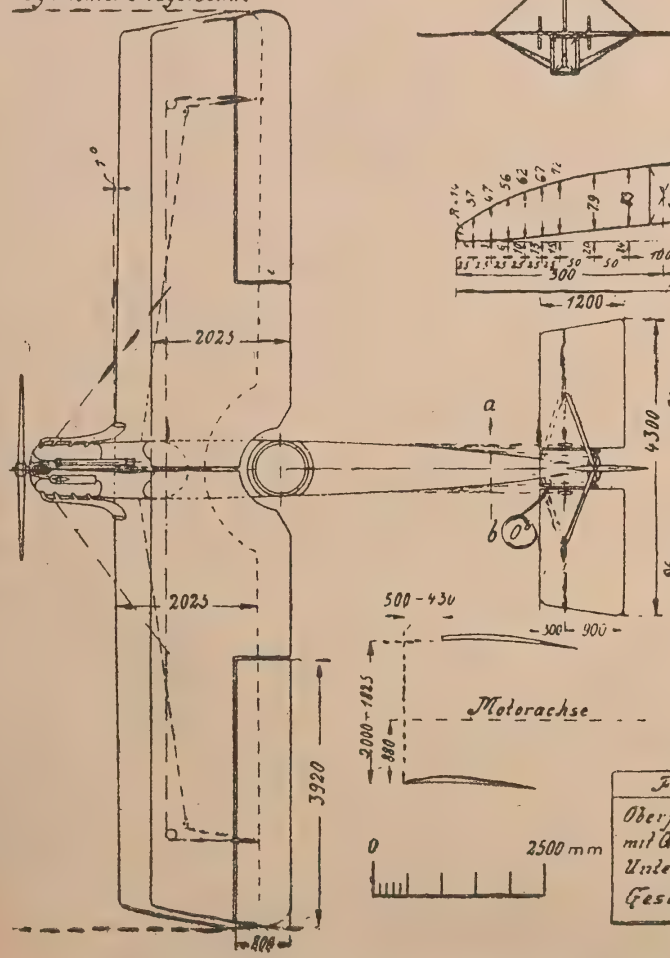
Inhalt 0,92 m³

Rumpf Holzdrahtboot
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Rumpfverspannung Draht
Rumpfaußenhaut Leinen

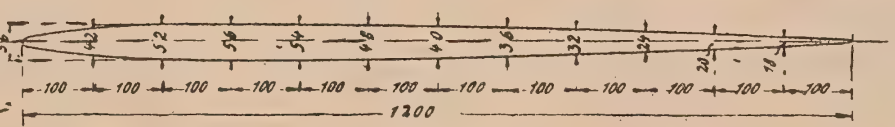


Rippe des Ober- und Unterflügels Rippenabstand 300 – 340 mm

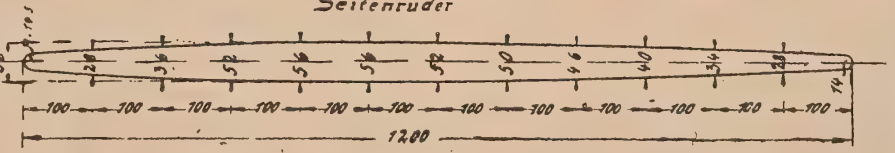


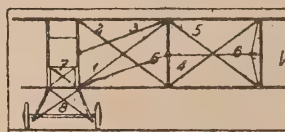


Höhenruder



Seitenruder





		mm	Φ			min	Φ
1	vorn	Draht, doppelt	3.5	6	vorn	Draht, einfach	1.5
"	hinten	"	"	"	hinten	"	"
2	vorn	" einfach	"	7	vorn	" "	3.0
"	hinten	"	"	"	hinten	" "	"
3	—	"	2.5	8	vorn	Kabel "	6.0
4	vorn	doppelt	3.0	"	hinten	" "	4.6
"	hinten	"	"	"	Tiefen-		
5	vorn	" einfach			kreuzver-	Draht, einfach	2.5
"	hinten	" "	"		spannung		

Flächen-Inhalt m²	Motor	Luftschraube	Kühler	Fahrgestell	
Oberflügel mit Querruder } = 25,50 m² Unterflügel = 24,86 " Gesamt = 50,36 m²	190 PS Renault Bremsleistung: N = 190 PS n = 1550 – 1600	Eclaer, Holz, 2 flg. Durchm. = 2,76 cm Blattbreite = 21 cm Steigung = n = 1550 – 1600	Stirnkühler mit Abdeckvorrichtg. 10 l Inhalt Gesamtes Kühlwasser 25 Liter	Streben: Stahlrohr ohne Füllerung 91 × 27,5 mm	Federung: Gummischnur Federungsweg: ohne Begrenzung Reifen 750 × 125 Nabe: Breite 180 mm. innerer Durchm.: 56 mm.

A Page reproduced from " Flugsport " showing general arrangement drawings in plan and front and side elevations, diagrammatic view of control arrangements, wing, elevator, and rudder sections, etc., of the Dorand Biplane.

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To left are the levers for gas and air regulation, for spark-timing, radiator blinding and closing of the oil tank. Small windows are provided on both sides of the fuselage in the bottom in front of the rudder-bar.

In the observer's cockpit folding-seats are arranged at both the front and back sides. In front of the observer and behind the main petrol tank two boxes for the hanging of four bombs are fixed on each side of the fuselage. Between them a photographic apparatus can be mounted over an opening in the bottom.

Aluminium plates for the mounting of the commutator and the contact-breaker for wireless are fixed to the right interior wall of the observer's cockpit, while the rest of the instruments are placed behind the seat.

Armament.

The pilot is armed with a fixed machine-gun, which is mounted to right on the engine-cowl, and is operated by the left camshaft. The firing takes place by means of a Bowden wire pull from the control wheel. The observer is provided with two movable machine-guns, clutched together and mounted on a ring that can be raised.

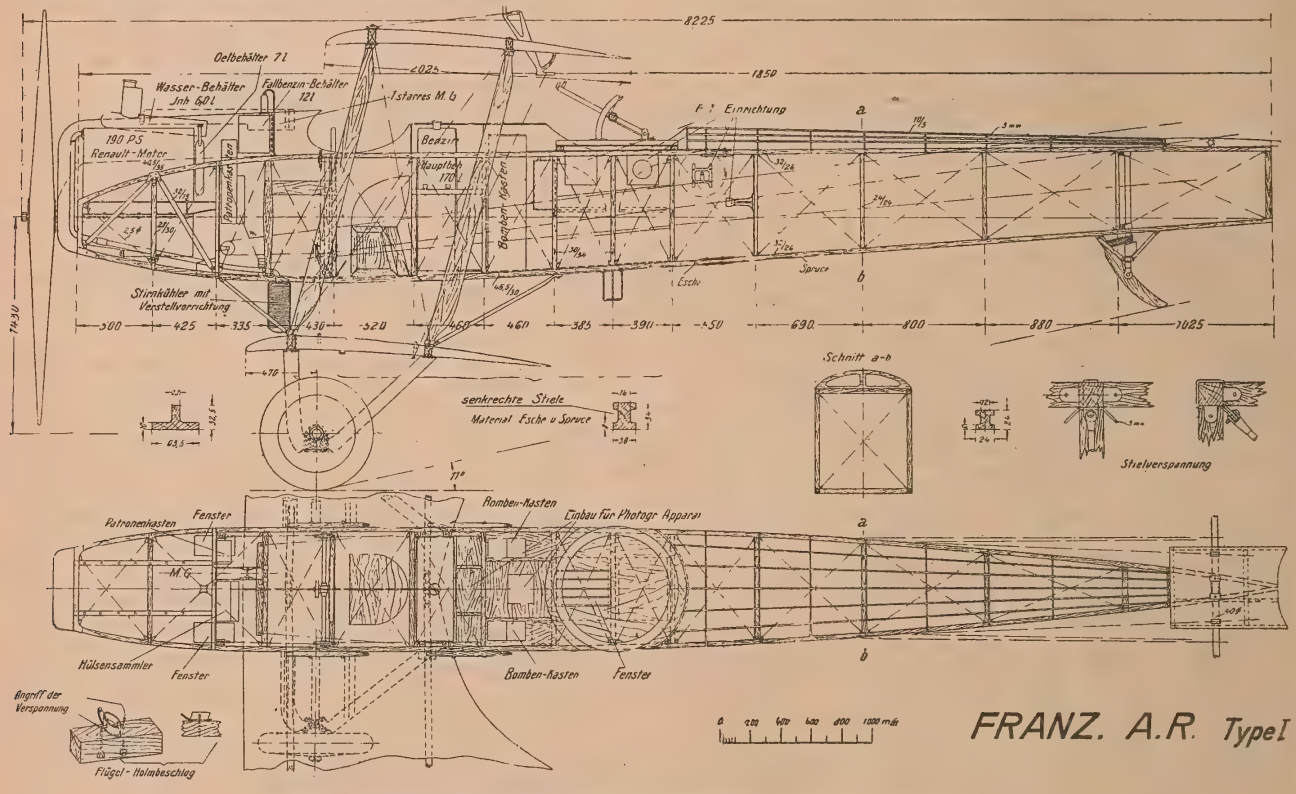
The empty weight of the aircraft is 890 kilos. A note on the rudder gives the weight of the fuel (poids combustile) as 140 kg. and that of useful load (poids utile) at 300 kg., the total load working thus out at 1,330 kg. As the planes have an area of 50.36 square metres, the loading of the planes is thus $\frac{1330}{50.36} =$ 26.40 kg. per sq. m., and the engine performance $\frac{1330}{190.36} =$ 7 kg. per h.p.

The main object of the design seems to have been the production of a light aeroplane with fairly high wing loading. The construction of component parts, such as stampings, has, therefore, been kept simple and light.

Weights.	Kg.
Engine	245
Cooling water	25
Airscrew	22
One main petrol tank	22.5
One auxiliary petrol tank	2
One oil tank	2
Engine equipment, exhaust collector body with tools	244.5
Landing gear	60
Control arrangement	6
Planes	234.5
Rudder and elevator	26.5
Empty load	890
Total weight	1330

Load (Approximately).	Kg.
Pilot and observer	150
Armament	75
4 bombs @ 12 kg.	48
Wireless and photography equipment	27
182 lit. petrol; 7 lit. oil	140
	440

Note painted on the rudder:
"Useful load" ..... 300 kg.
Fuel ..... 140 kg.
Average useful loading of the planes: 4.65 kg. sq. m.



Sectional Plan and Side Elevation of the Fuselage of the Dorand Biplane.

A MORNING WITH THE A.I.D.

A TRUE TALE UNDOPED.

By Munitionette.

"Where is your works' manager, please?" came a high, plaintive bleat.

We glanced up.

He gazed upon us through round spectacles benignly. His white beard fell full to his waist. In one hand he carried a black cotton umbrella, in the other black cotton gloves. The bench hid his feet, but I know he had gaiters and goloshes.

Someone answered his question, and he disappeared, as did our Owner, and we fell to afresh. Now we are on very good terms with our Owner, and he vanished from our ken for hours. Something malignant was afoot.

Suddenly a still small voice at my elbow penetrated the roar of flying belts and the slate pencil shrieking of sawn timber—

"He wants more glue."

"What?" and my opposite number showed a pair of infuriated blue eyes through a tangle of gluey hair which she had been struggling for some time, with glue-caked fingers, to free from equally gluey brows and lashes. I had just detached my overall, to its manifest damage, from an unnoticed patch of glue on the side of the bench before me. The Owner smiled.

"He wants to see the glue," he remarked, "on the ribs you're making."

"Who is he?"

"Inspector of the Trench Warfare Department."

We both leapt anew, and the Owner smiled again, wearily, and drawled—

"We've got to please him, so mind you do. He wants glue." Then aside: "I wonder if the Tanks pleased his ilk as little for two years as we seem to do?"

Well, he wanted glue. He got it. We fairly ladled it about. The other girl's hat stuck to her head before she reached home, and my hands remained fast to the handles of my bicycle.

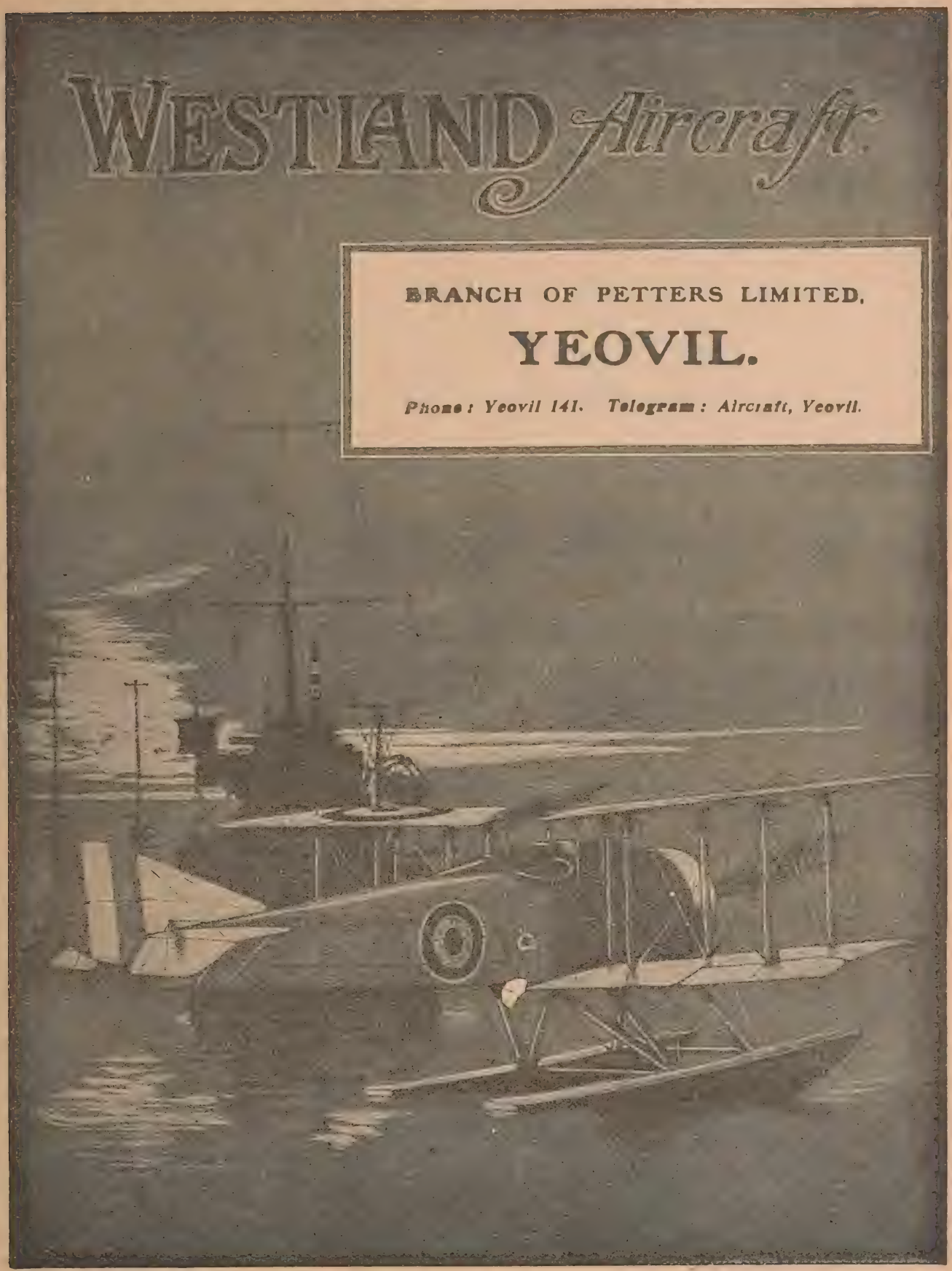
Next morning the Owner was strolling by our bench when we arrived. "He says there's too much glue," greeted us. "He doesn't want to feel it, he wants to see it."

"Is that all?" we gasped.

"I call it the dizzy limit!" muttered the foreman, as he returned to his own job.

. . . . . .

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GERMAN BAROGRAPH NO. 1623.

Range 0 to 8,000 Metres.

The following is the description of a German Barograph translated from a report received from the Section Technique, Paris, and published by the Ministry of Munitions—Technical Department (Aircraft Production)—by whose kind permission the report is reproduced.

A general description of the instrument is not required, as the drawings are sufficiently clear. The instrument itself is mounted on a right-angled frame formed of a single aluminium piece, so that it can be placed into a box like a drawer. It is secured by a blade spring.

It can be taken out with one hand by passing the last three fingers through the handle, and, at the same time, raising the locking spring with the thumb.

NOTES ON DETAIL.

HANGING SUPPORT BOX.—The construction is simple and of plywood, the workmanship and finish are sufficiently good for the purpose. A correction table is mounted on the outside of the box, and is protected by a celluloid plaque attached by nails.

The elastic supports seem to be good but clumsy; from the state of the apparatus after use it may be deducted that the elastic employed is not strong enough.

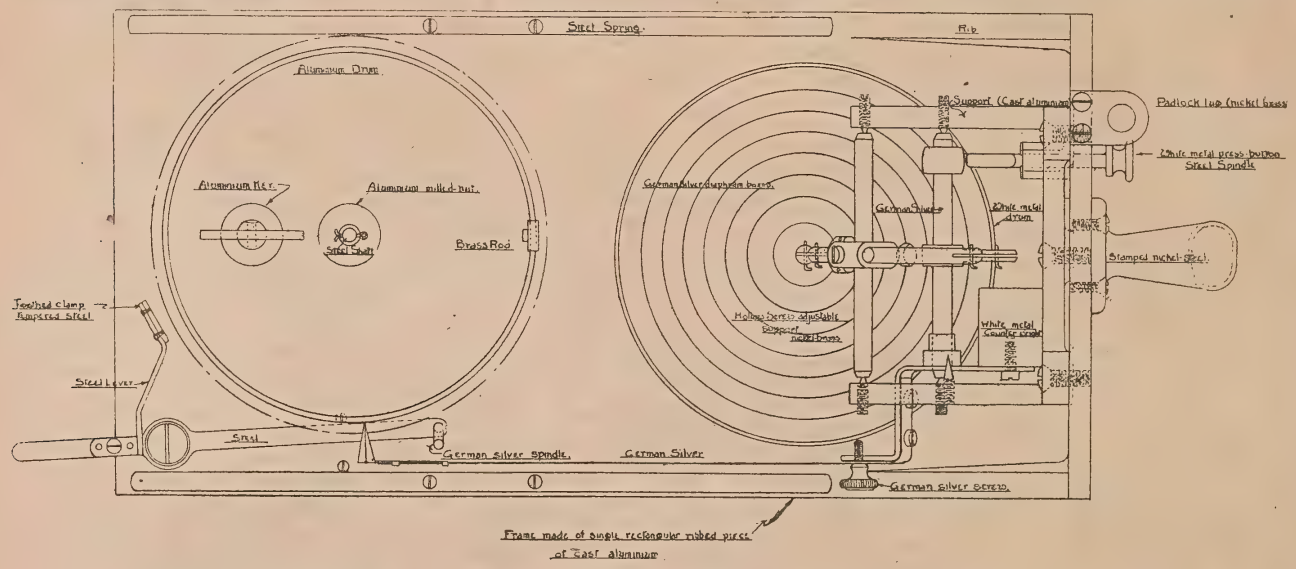
ALUMINIUM FRAME.—Shape is practical and satisfactory.

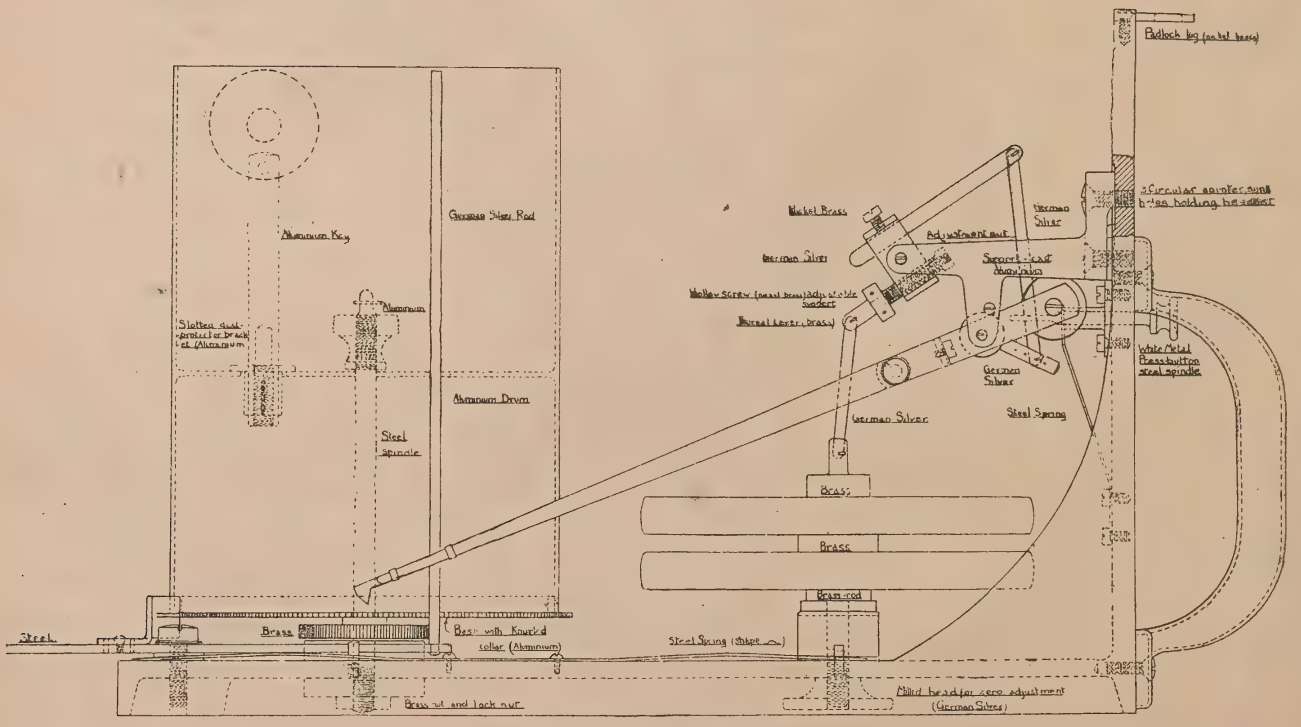
CYLINDER.—Very high; easily read up to 5,000 metres (more than 1 mm. for 100 metres of altitude).

CLOCK MOVEMENT.—The regulator is inside. The screw winding key cannot work loose, and has a bracket at its base which seems to have no other object than that of preventing dust from entering the interior of the drum

DRUM BRAKE.—The contact of the pen with the drum is broken by means of a lever, the end of which protrudes from the wooden box. At the same time, a further lever, bearing a steel clamp, is applied to a knurled collar at the base of the drum and stops its rotation.

The idea is good but the design is poor, for when the steel jaw rests too lightly on the flange the drum continues to revolve for some time. This causes the aluminium flange to become worn and a detrimental effect is produced in the clock movement, which has extra work to do.





Plan and Elevation of the German Barograph.

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LEVERS.—The general system is very simple, and may be easily adjusted; but the joints have too much play, a defect which could have been avoided by more careful workmanship.

BUTTON PRESS.—When the button is pressed the flattened end of its spindle juts out on to the top part of a little drum of soft white metal, thus imparting to it a slight rotary motion, which acts upon the whole system and consequently upon the needle.

The idea is good in practice, but has one great defect. The spindle of the button is too rigid, and, in spite of the amount of play it has, produces a rough reaction upon the pivot supporting the white metal drum.

The flattening of the spindle, although insufficient for the purpose, only seems to have been devised with a view to avoiding this disadvantage.

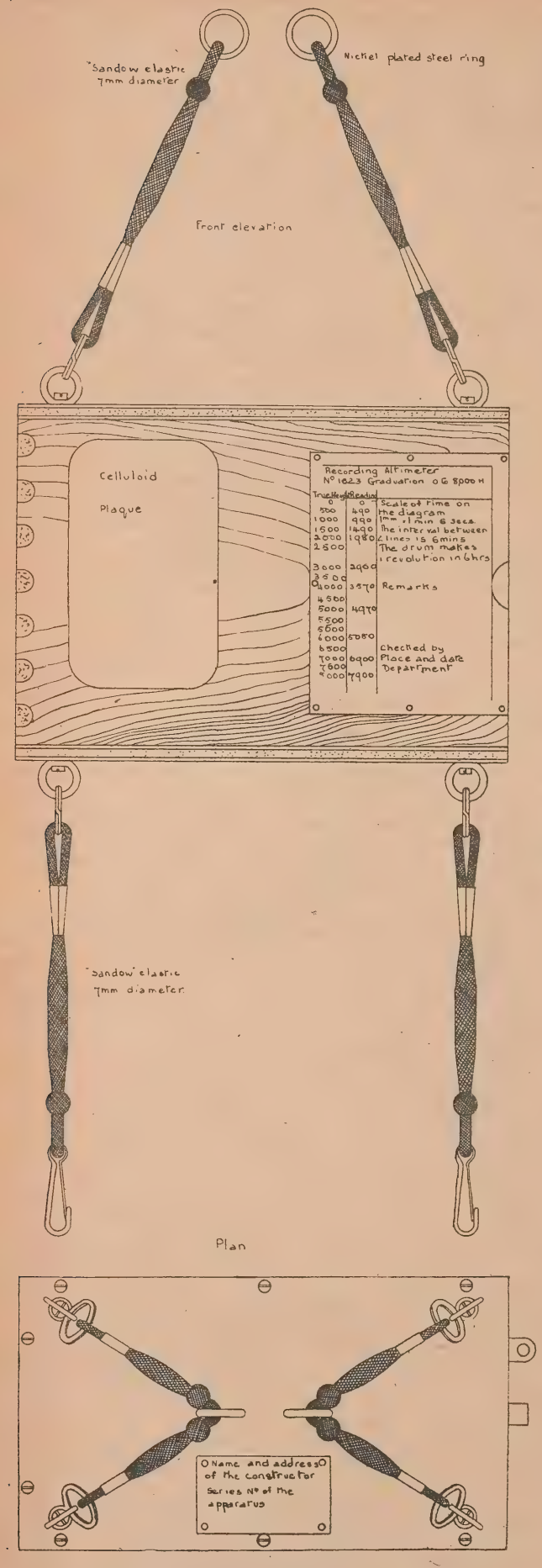
DIAPHRAGM BOXES.—The diaphragm boxes are very large (diameter 72 mm.), which facilitates manufacture and adjustment. Possibly also another result is a greater sensibility, but it seems that large diaphragm boxes have been adopted especially to obtain the range of 0 metres to 8,000 metres, without having too large a movement of the levers, which would increase wear.

ZERO ADJUSTING BUTTON.—This button, placed under the frame, allows the diaphragm boxes to be displaced vertically. Consequently the needle may be moved in order to put it at zero.

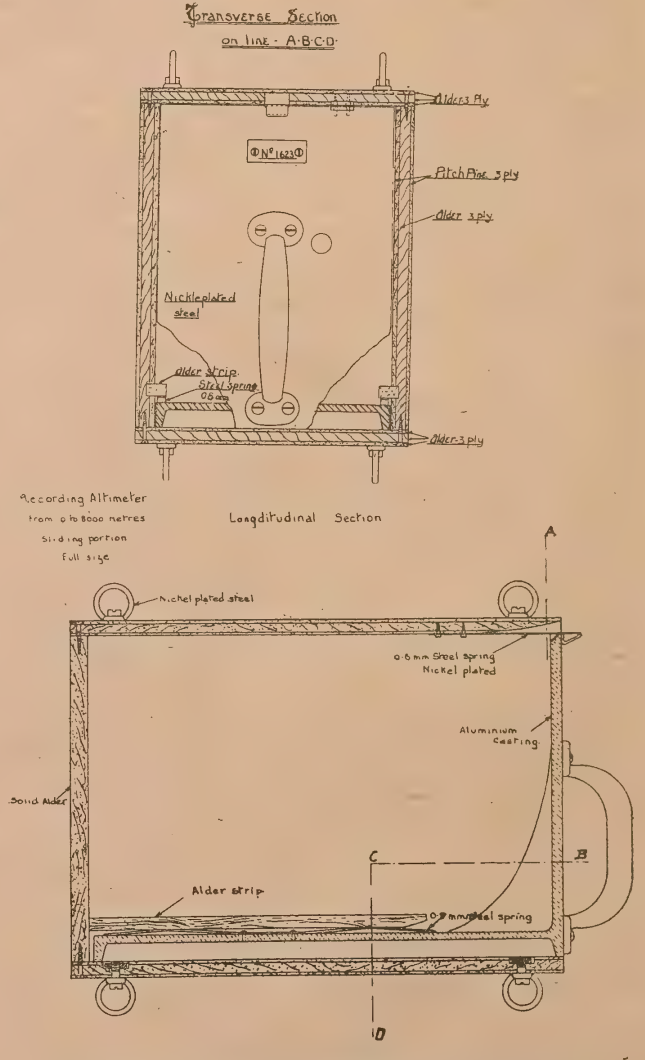
This knob cannot be turned when the instrument is in its box and placed in position, but it is within easy reach when the instrument has been taken out of its box.

CONCLUSION.—This instrument has been put on the market without useless and costly finish. It has been fairly well thought out as regards its practical application for a settled purpose, but certain parts are not sufficiently well made. The play of the levers is too extreme to be put down to the effects of wear or of landing.

(Sgd.) J. G. WEIR,
Brigadier-General,
Controller, Technical Department.



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TEST 3.—Job, finishing shell. Mermaid tool gave very high satisfaction. It ran for $7\frac{1}{2}$ hours and was still in good condition when the test was stopped.

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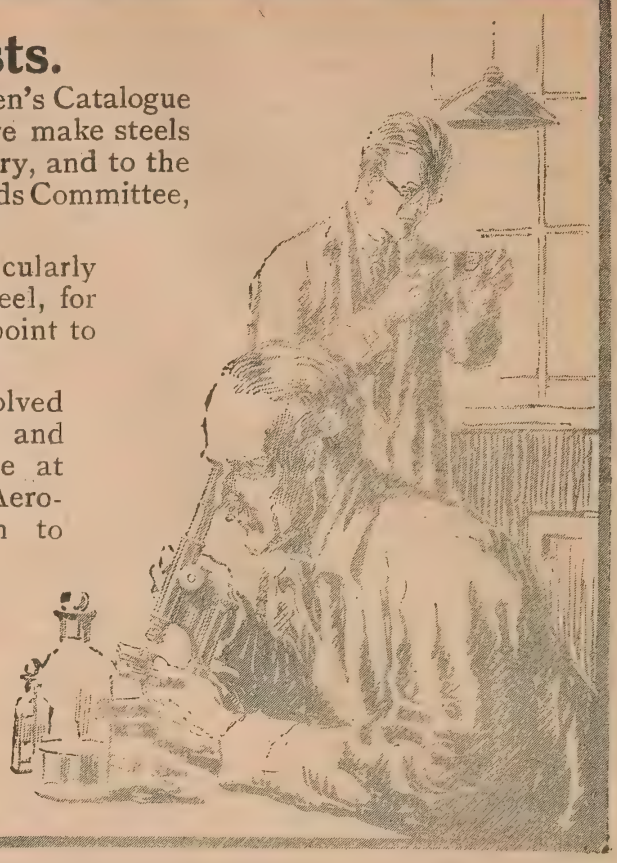
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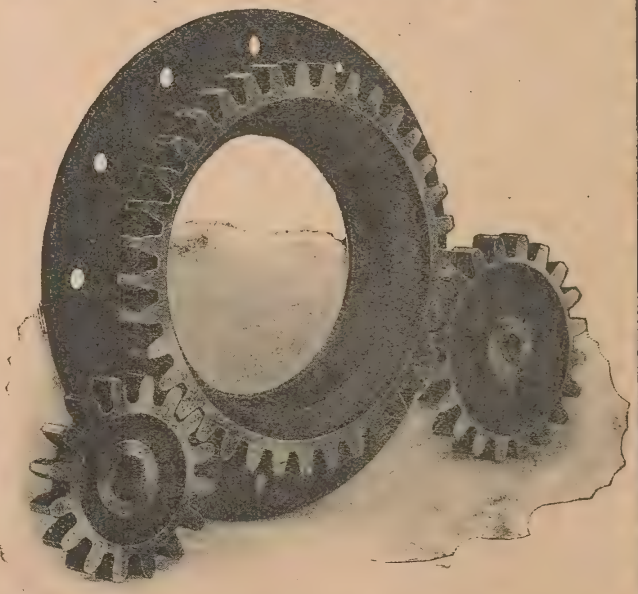
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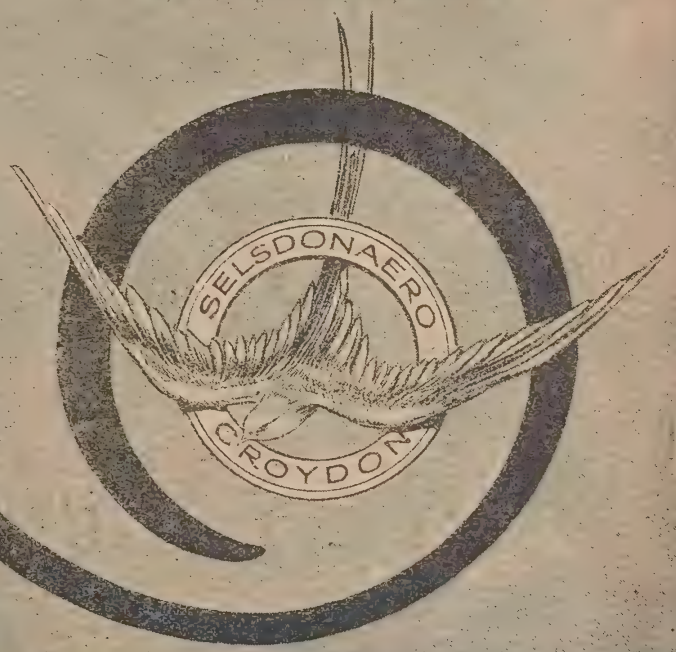
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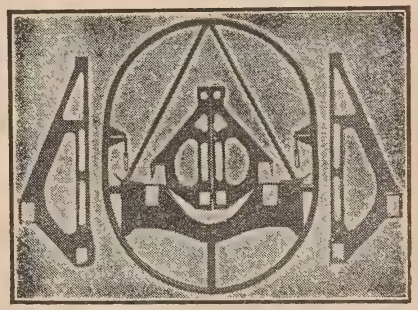
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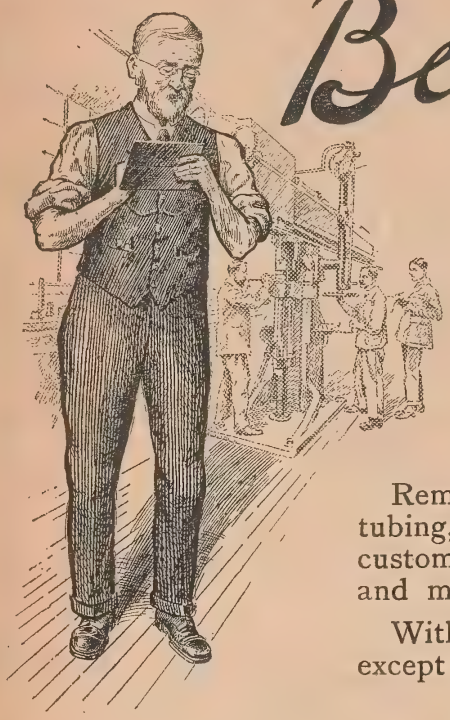
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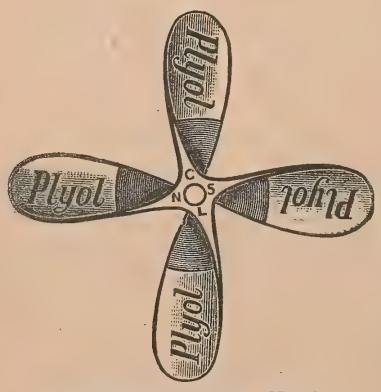
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Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Balloons

C. G. Spencer and Sons, Ltd., 50A, Highbury Grove, N.5. "Aeronaut, London."

Bent Timber Parts— Dalston 1593.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough" Market Harborough 13.
The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blinds—

J. Avery & Co., 81, Gt. Portland Street, London, W. "Velarium, London." Gerrard 6620.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

T. M. Duché & Sons, 6, Eastcheap. "Duché, London." Avenue 2096.
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

Titanine, Ltd., 175, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.
Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 251 254.
Beardmore Aero Eng., Ltd, 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 118
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7020.
Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines)
Green Engine Co., Ltd., Twickenham. Richmond 1103.
Gwynnes, Ltd., Hammersmith, W "Gwynne, Hammersmith." Hammersmith 1910
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8426
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1 "Elevenfold, London." Walthamstow 811 (3 lines).
Walton Motors, Ltd., Walton-on-Thames "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Brown Bros., Ltd., Gt. Eastern St., E.C.2.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70
Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2180

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 241.
Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

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Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London." Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6242.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.

Metal Parts and Fittings (continued)
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Propellers (continued)—
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 149

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 766

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

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Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1. Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 (6 3237.
Nicklin, Bernard & Co., Birmingham, "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.
Avenue. 1432.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—
(Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

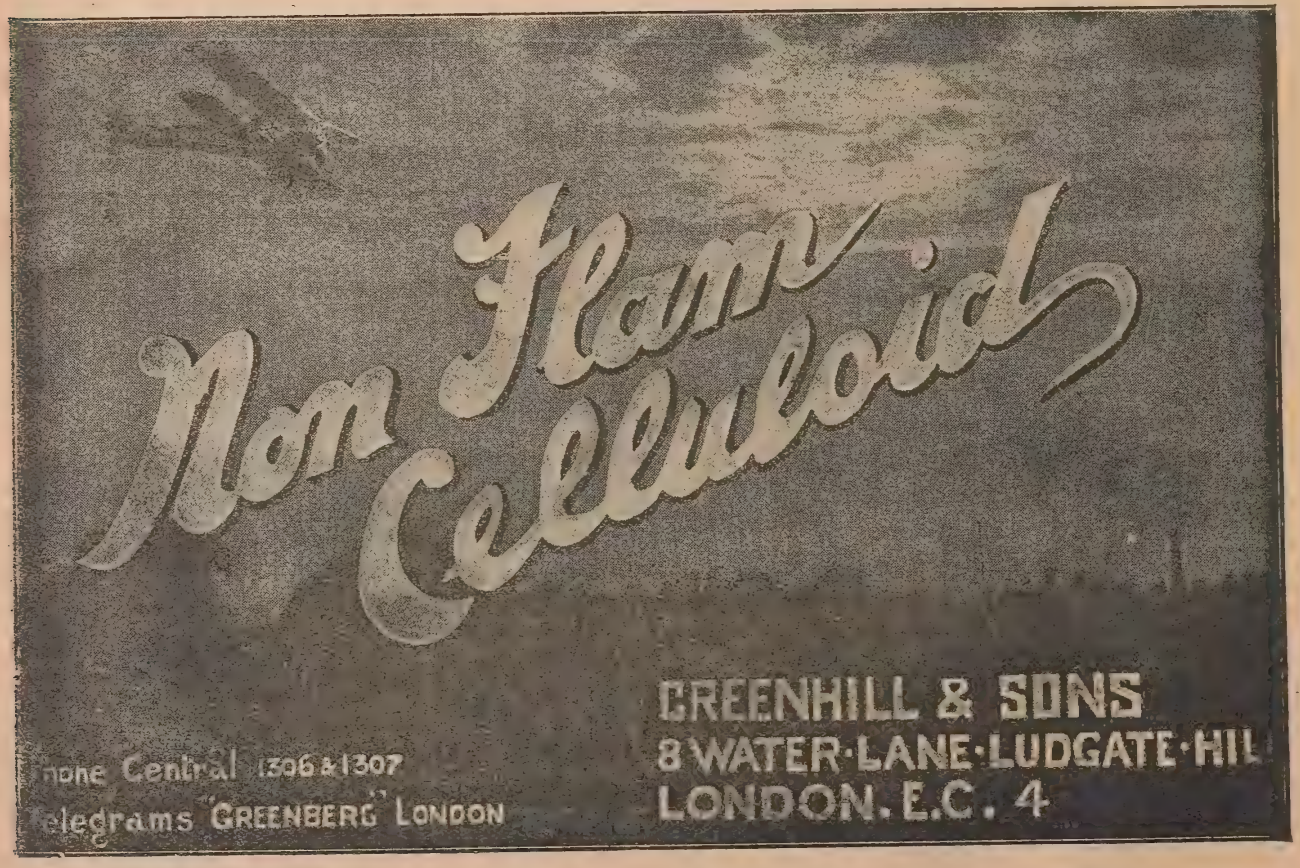
Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

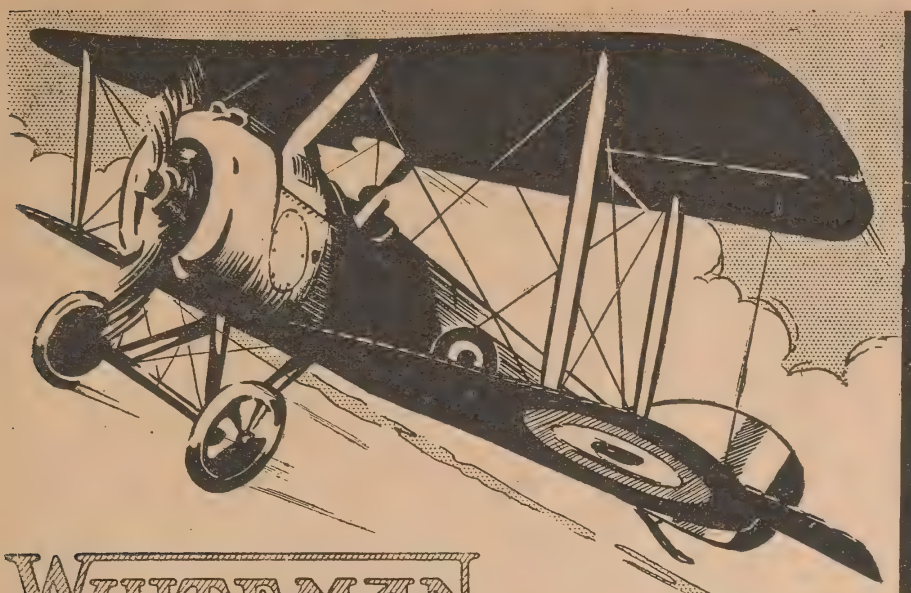
Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.
Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3674.





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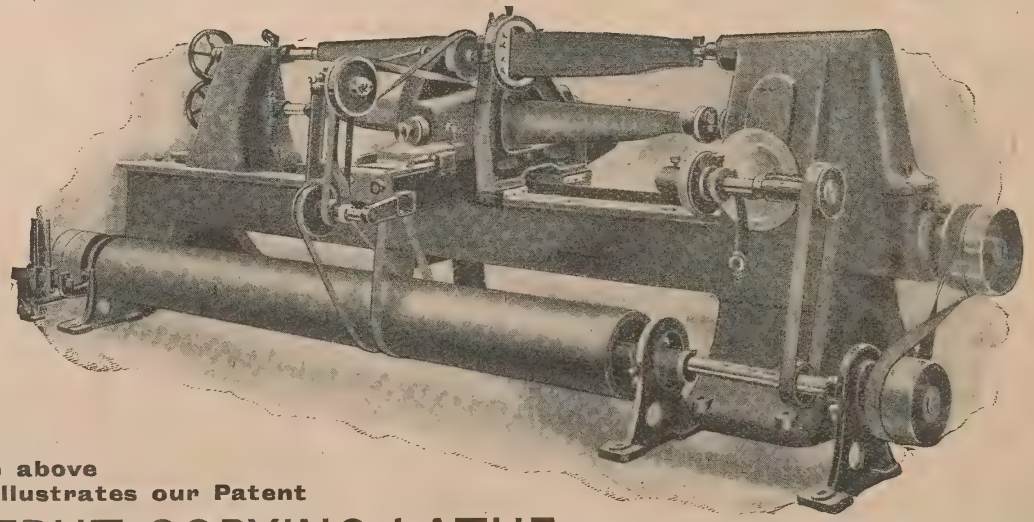
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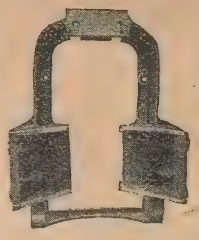
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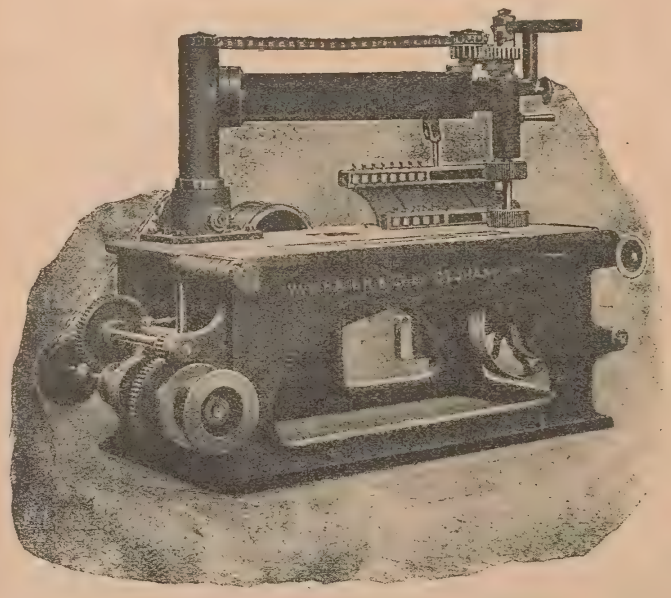
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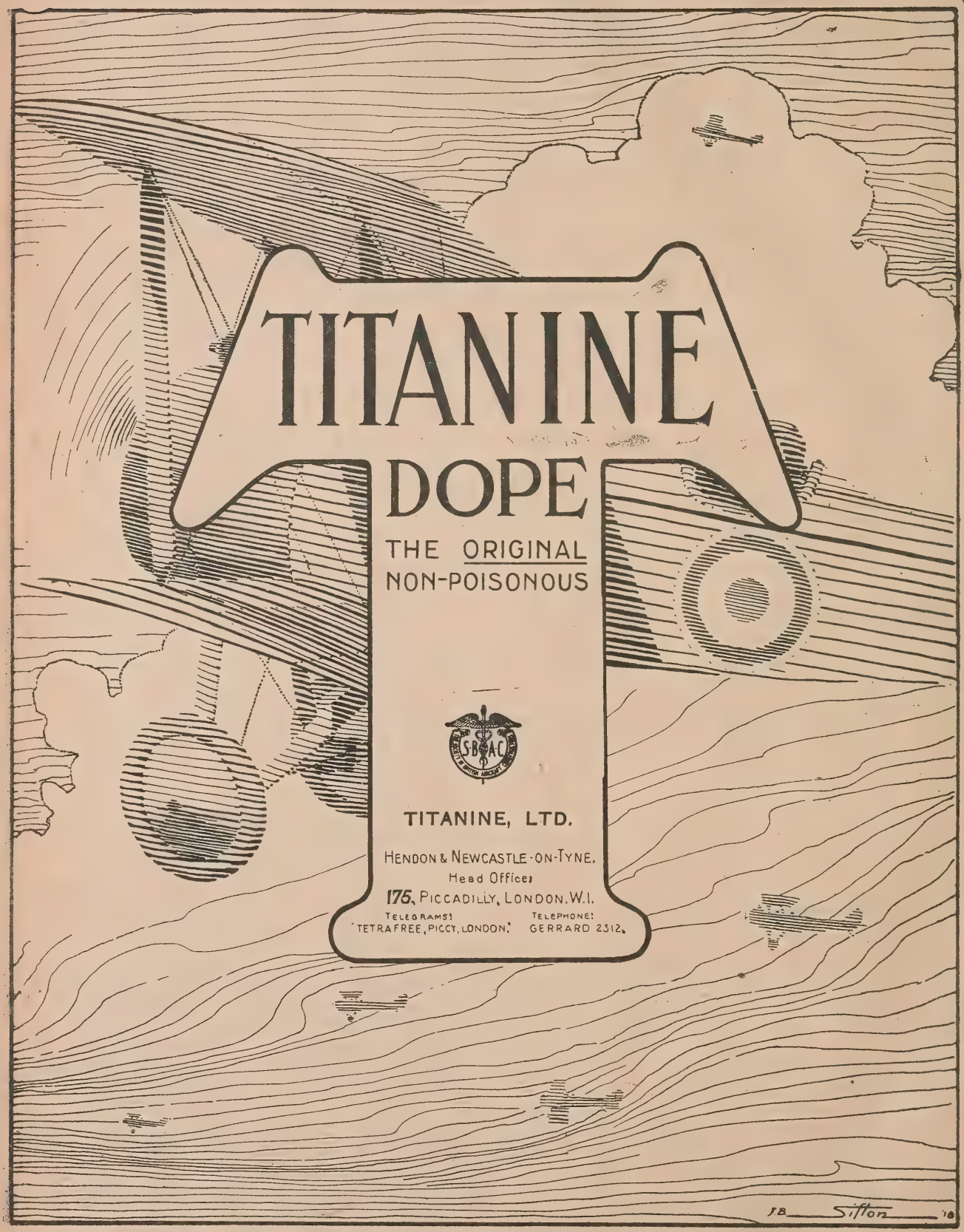
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records :—

Patents Applications.

Blondeau, G. J. E. Fuel control device for engines of aircraft. No. 17004. Oct. 17th.
Calthrop, E. R. Parachutes. No. 17062. Oct. 18th.
Clarke, T. W. K. Liftng and controlling surfaces for air, etc., craft. No. 16917. Oct. 16th.
Daniels, L. A. Tilt or turn indicators for aeroplanes. No. 16822. Oct. 15th.
Fairey Aviation Co. Means of securing fittings to spars of aircraft. No. 16892. Oct. 16th.
Ferrari, P. Flying-machines. No. 16852. Oct. 15th.
Garseadden, T. D. Aerial screw propeller. No. 16775. Oct. 15th.
Hill, P. P. Aeronautical stability indicator. No. 16690. Oct. 14th.
Holden, H. Shaping-machines for aeroplane propeller blades. No. 16773. Oct. 15th.
Holt, H. E. S. Parachutes. No. 16813. Oct. 15th.
Holt, H. E. S. Parachutes. No. 16855. Oct. 16th.
Holt, H. E. S. Parachutes. No. 17050. Oct. 18th.
Hutchings, H. R. Siphon for emptying petrol cans. No. 17085. Oct. 19th.
Jackson, C. A. Rudder carriers and rudder brakes. No. 17075. Oct. 18th.
Kettlewell, H. M. Fairings for aircraft. No. 17099. Oct. 19th.
King, H. G. Flying-boats, floats, etc. No. 16872. Oct. 16th.
Kingerlee, C. T. Catch-release for aero or seaplanes. No. 17031. Oct. 18th.
Lobb, H. B. Toy aeroplanes. No. 16922. Oct. 16th.
Lott, R. E. L. Grenade carrying and dropping gear for aircraft. No. 17008. Oct. 17th.
Blair, C. Machine for laminations of spars, etc., in construction of aircraft. No. 17425. Oct. 25th.
Blair, C. Glueing-machine for glueing timber for laminating spars, etc. No. 17426. Oct. 25th.
Bridges, C. W. Taping-machine for aeroplane parts. No. 17435. Oct. 25th.
Cameron, D. L. Manufacture of aeroplane wing ribs, etc. No. 17284. Oct. 23rd.
Clark, W. P. Aircraft. No. 17376. Oct. 24th.
Dumbrell, J. W. Clinometers for aircraft. No. 17243. Oct. 22nd.
Fowler, L. P. Control of aircraft rudders, elevators, etc. No. 17178. Oct. 21st.
Gloyne, H. M. Electric aeroplane bicycle, etc. No. 17420. Oct. 25th.
Grand, S. E. Man-saving parachute operating in conjunction with an aeroplane. No. 17489. Oct. 26th.
Holt, H. E. S. Parachutes. No. 17470. Oct. 25th.
Kennedy, C. J. H. Mackenzie. Control mechanism of aircraft, etc. No. 17240. Oct. 22nd.
London and Provincial Aviation Co. Landing-apparatus for use on board ship for aeroplanes. No. 17347. Oct. 23rd.
McConnell, R.S. Wind-speed and course-indicators for aircraft, naval, etc., vessels, etc. No. 17205. Oct. 22nd.
Miller, A. R. Obtaining correct air-speed readings on aircraft. No. 17374. Oct. 24th.
Mooney, D. J. Rolls for forming metal parts for aviation. No. 17378. Oct. 24th.
Thomas, G. H. Airships. No. 17362. Oct. 23rd.
Wills, W. Instruments for determining inclination of aircraft, etc. No. 17499. Oct. 26th.
McKnary, J. E. Protective armour for aviation pilots. No. 16984. Oct. 17th.
May, W. B. Device for indicating to pilot amount of deviation of aeroplane, etc., from horizontal. No. 17026. Oct. 18th.
Molloy, P. Manufacturing struts and spars for aircraft. No. 16691. Oct. 14th.
Passey, L. T. Aeroplane flight gauge. No. 16948. Oct. 17th.
Payze, A. Safety belt and/or parachute harness for aviator. No. 17093. Oct. 19th.
Rudge-Whitworth, Ltd. Wiring-means for attachment to aeroplane spars. No. 17104. Oct. 19th.
Smith, A. Aircraft dope. No. 17101. Oct. 19th.
Soc. Anon. d'Aviation L. Bréguet. Connection of metal tubes or construction of tubular metal frame-work, etc. No. 16738. Oct. 14th.
Soc. Anon. Nieuport. Internal-combustion engines for aircraft. No. 16849. Oct. 15th.
Thomas, G. H. Landing-wheels of aeroplanes. No. 17098. Oct. 19th.
Tripp, W. H. Tilting and turning indicator for aircraft. No. 16812. Oct. 15th.

Complete Specifications Accepted Prints of which can be Obtained on and after Nov. 7th, 1918

119,707. Oct. 12th, 1917. Carson, J. H., and Wade, G. H Manœuvring apparatus of an aeroplane.
119,726. Oct. 24, 1917. Walton, F. Struts, spars, ribs and similar members of aeroplanes and other aircraft.
119,796. Feb. 14th, 1918. Aner, M. A. Anti-aircraft devices for cities and the like.
119,837. May 30th, 1918. Shaw, W. R. D. Airships.

Complete Specifications Accepted, Prints of which can be obtained on and after Nov. 14th, 1918.

119,967. Jan. 14th, 1918. Lang Propeller, Ltd., and Laing, C. A. Manufacture of aeroplane propellers.
119,974. Jan. 24th, 1918. Blackburn Aeroplane and Motor Co., and Booth, H. Tail fins of aeroplanes or other aircraft.

Abridgments of Recently Published Specifications.

118,500. Aeronautics. Hawksley, A. F., Fairhaven, Lytham, Lancashire.

Shock of Landing, Deadening.—The wheel axle or the transverse member supporting the floats of an aeroplane is secured to the chassis by discs or radially placed ribbons or cords of rubber in tension which allow movement in any direction. Figs. 2 and 3 show discs of rubber G secured, as shown, to a flanged sleeve E surrounding the axle and to an oval frame F having a central flange *f*. The discs G may be dished, as shown, or flat, or both forms may be used together, and their edges and centres are strengthened by canvas vulcanised to the rubber, or a bead may be formed by a strip of rubber, cord, wire, etc., moulded in or vulcanised to the edges. Each disc may be formed in two parts to enable it to be placed in position without removing the wheel. The frame F may have sockets *a*, *b* to receive the sockets A, B of the chassis, and the frames on the two sides of the machine may be connected by struts or ties. Plates or collars may limit the lateral movements of the axle. When rubber cords or ribbons are employed, they are stretched radially between the sleeve E and frame F. Blocks of rubber may be placed between the sleeve E and frame F to act as additional buffers when landing shocks are excessive. The bearings may be placed on one or both sides of each wheel.

FIG.2.

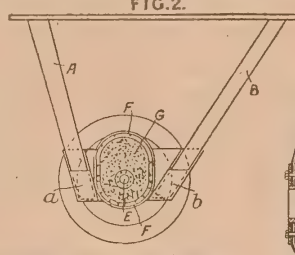
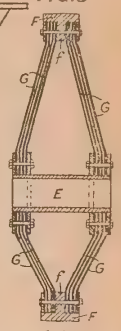


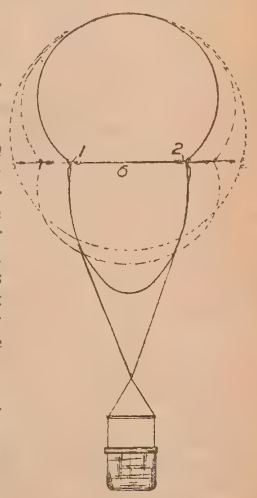
FIG.3



Cars.—The pilot's seat may be mounted on transverse bars similarly supported.

118,474. Aeronautics. Aeronautical Instrument Co. and Brewer, G., 33, Chancery Lane, London.

Aerostats.—Kite balloons and non-rigid airships are provided with elastic tension springs 6 extending in a plane across the balloon so as normally to draw in the envelope as shown, expansion of the gas distending the envelope as shown in dotted lines. The springs 6 are laced through interior rigging bands 1, 2, and are arranged in a plane passing through the axis of the balloon or in the planes not more than one-quarter the diameter of the balloon above or below the axis.



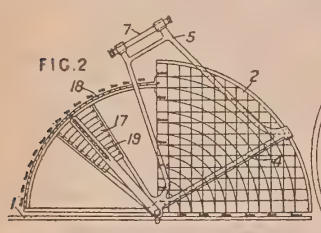
118,596. Sparking-plugs. Soc. Ceramica R. Ginori, 115, San Cristofore, Milan, Italy. May 25, 1918, No. 8702. Convention date, Aug. 16, 1917. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act.

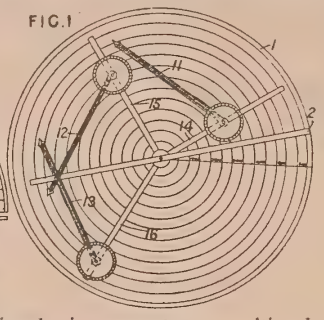
For the purpose of rendering porcelain and like insulations more resistant to mechanical strains, metal oxides or salts are mixed therewith, particularly those of cobalt, copper, zinc, iron, or manganese.

118,604. Rangefinders. Overaas, G., Zonsbergfjordens beefaestninger, Norway. July 10th, 1918, No. 11312. Convention date, Aug. 1st, 1917. Not yet accepted Abridged as open to inspection under Sect. 91 of the Act.

A range-finder for aerial targets comprises a graduated horizontal plate 1 at a battery station, on which are mounted a telescope 7 and a graduated vertical plate 2 rotatable round a vertical axis, in combination with one or more index arms 11, 12, 13 rotatable about points on the horizontal plate corresponding

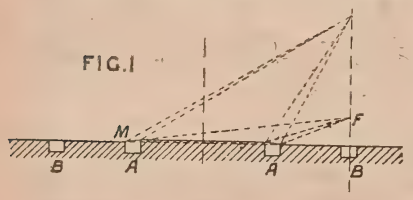
in position with the positions of sub-stations and in accordance with the azimuths of telescopes at the respective sub-stations; means may be provided to facilitate firing at a target when it reaches a predetermined point in its path. The horizontal and vertical points may be provided with circular arcs separated by known distances in accordance with a particular scale, and horizontal and vertical lines separated by known distances on the same scale may be provided on the vertical plate. The telescope 7 is carried by a frame 5 having an index thread 4 and rotatable





about a horizontal axis at the centre of the arcs on the vertical plate. The arms 11, 12, 13 may be adjusted by hand in accordance with information telephoned from the sub-stations, and with the aid of the protractors shown, or may be moved electrically in synchronism with the azimuth movement of the telescopes at the sub-stations. The arms 11, 12, 13 and their protractors may be slidably mounted on rails 14, 15, 16 which are rotatable about a vertical axis so that the points about which the arms turn may be adjusted when the positions of the sub-stations are altered. The frame 5 may carry a graduated sector 17 moving over a graduated arc 18, and a pivoted arm 19 adjustable by hand, to enable a gun to be sighted so that the target may be hit at a predetermined point in its path.

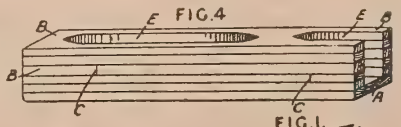
118,739. Aeronautics. Hall, J. I., 58, Burton Road, Kingston-on-Thames, Surrey, and Callender's Cable & Construction Co., Hamilton House, Victoria Embankment, London.

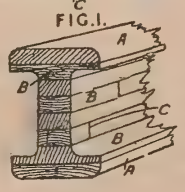


Alighting Indicators.—To facilitate night landings, an aerodrome is provided with two concentric rings of glazed lights A, B let into the ground, the surfaces of the inner lights being inclined towards the centre of the circle, where the ground is raised to the level of the inner edges. Any one of the outer lights is illuminated to indicate the direction of the wind, and the pilot flies over it when about to alight. The inner lights are all illuminated, so that the pilot can estimate his height by observing the appearance of the ring, the light most remote becoming invisible when the machine travels along the line M - - F. All the lights are neutral tinted, but by using coloured lamps in the lights adjacent to the guiding-light in the outer ring, the force of the wind may be indicated.

118,714. Aeronautics. Ayling, G. J. and Ayling, G., Riverside, Putney, London.

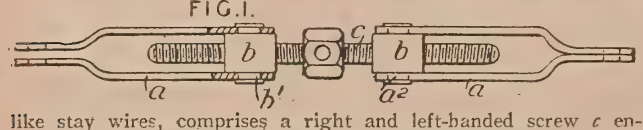
Framework. — Girders, spars, struts, etc., for aerial machines are constructed of laminations of wood with the grain running in different directions, the outer laminations being of the complete length of the girders, etc., and the inner laminations of different lengths spliced together with the splices at different positions. Fig. 1 shows a spar or strut of outer laminations A and inner laminations B spliced at C. The spar, etc., may be hollow throughout, or may be hollowed at intervals, as shown at E in Fig. 4, which shows the top layer A removed.





118,769. Wire-strainers. Jennings, F. A., Greenbank, Marlboro' Hill, Harrow, Middlesex.

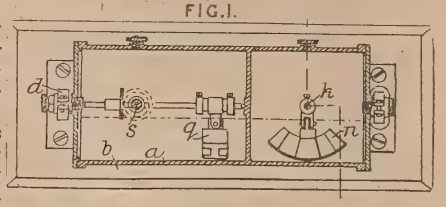
A wire or like strainer, particularly adapted for aeroplane and



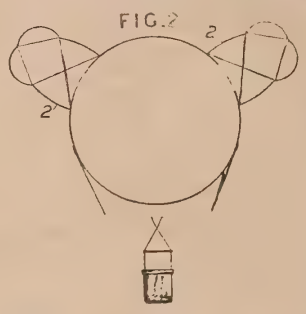
like stay wires, comprises a right and left-handed screw *c* engaging with nuts *d* formed with trunnions b^1, which are passed through holes a^2 formed in metal stampings *a*. The trunnion ends are riveted over to secure the stampings together to form the shackle, but not so as to prevent rotation therein.

118,505. Clinometers. Dews, S. and Dews, G., 69, Boulton Road, Handsworth, Birmingham.

Clinometers for aircraft, submarines, etc., comprise two universally mounted pendulums *n*, *q*, and pointers on spindles *k*, *s*, working over dials. The casing *a* has trunnions received in clips *d* on standards adjustably mounted on a base plate *b*.



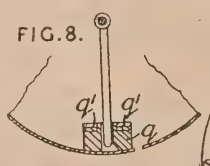
118,472. Aeronautics. Aeronautical Instrument Co. and Brewer, G., 33, Chancery Lane, London.

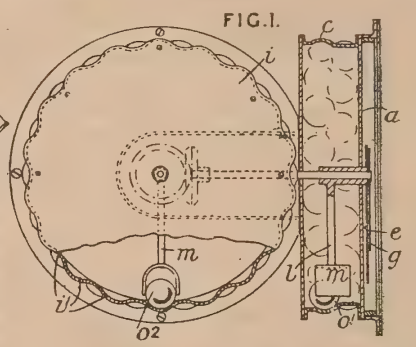


Aerostats; Captive Balloons.—A kite balloon is provided with only two fins 2 arranged as shown in cross-section and communicating with the interior of the balloon so that their form is maintained by gas pressure. The interior of the fins may be stayed as shown, and rigging may be secured to the outside to enable the fins to be pulled down against the balloon when stored and to assist in securing the balloon. According to the Provisional Specification, the fins have an angle of incidence of 5 or 6 degs.

118,540. Clinometers. Jameson, J., 81, Dover Street, Higher Crumpsall, Manchester.

A clinometer indicating changes of level in two planes, for use with aircraft, submarines, vehicles, etc., comprises two cylindrical casings at right-angles to one another containing rolling





balls o^1, o^2 separate from but engaging pendulum arms *l*, *m* actuating two pointers *g*, *e* working over the same or separate dials *a*. Depressions i^1 in the tracks of the balls damp the oscillations. The depressions may be staggered as shown. Fig. 8 shows a modification, in which the balls are replaced by sliding blocks *q* the friction of which is adjusted by movable weights q^1. In a modification for testing surfaces, the apparatus is mounted on a base, and each casing *c*, *i* can be rotated upon its axis by worm gearing. A platform to carry another instrument may be mounted on the casing *c* above the apparatus.

A CATALOGUE OF METAL PARTS.

A large illustrated list of various metal fittings for aeroplanes and other mechanical vehicles has been received from Best & Lloyd, Ltd. Pressure indicators, pumps, petrol needle-valves, and petrol taps are illustrated and the various sizes given. The firm claims to have in stock many standard A.G.S., A.M.C., Aero, R.A.F., and other parts.

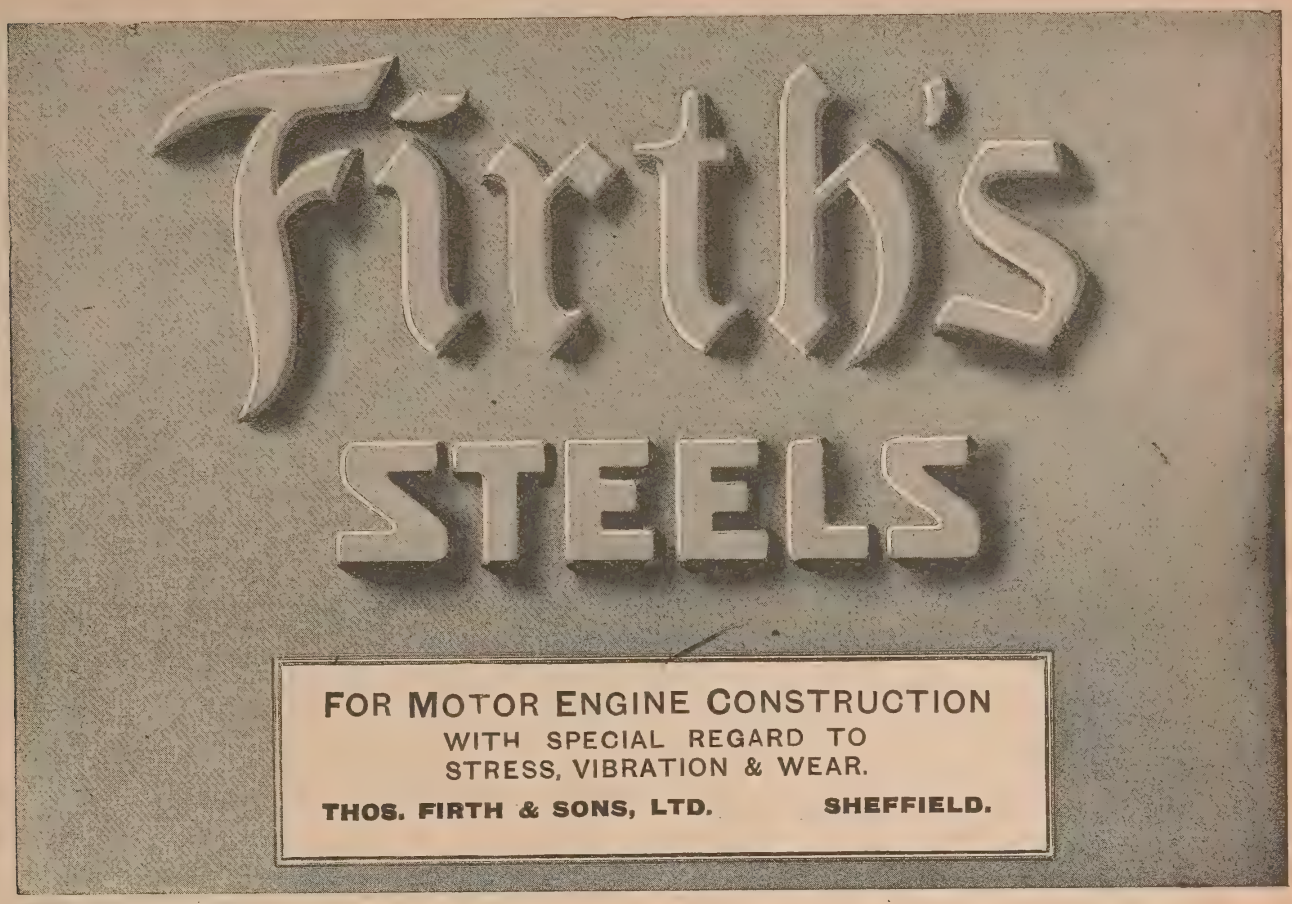
This list will be sent on application to Best & Lloyd, Ltd., Birmingham.

AN IMPACT TESTER.

It is generally recognised that static tests, though very valuable, do not give all the information desirable to enable the engineer to select those steels which give the best resistance to small impacts such as are met with in running machinery. Therefore a machine is needed which enables discrimination to be made at once between steels which are good and bad from this point of view. The Foster Instrument Company claim that the Eden-Foster Repeated Impact Testing Machine has these qualities.

The catalogue price of this machine, complete with driving pulley 8 ins. by 1 in., is £36, and tools for turning semi-circular groove, with accessories for measuring effective diameter, are £1 per set; but from August 15th all list prices were advanced by a total of 80 per cent.

A fully descriptive list can be obtained on application to Letchworth, Herts.—R. M.



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"COUNTING ONE'S CHICKENS BEFORE THEY ARE HATCHED."

By "Chevron d'Or."

Though we are often advised not to do as mentioned above, there yet appear to be some to whom this advice should be administered three times a day after meals, if not oftener. The class of person to whom this advice seems so necessary at the moment is chiefly to be found among those who believe all that they see in the daily Press with regard to the future of flying; and the particular chicken that they are counting so easily is one that will be a long time in the hatching.

To be more explicit, then, I will explain myself in this way. Let us not imagine that there will be a half-hourly aero service (bringing in a large revenue to its founders) from London to Sydney some few months after the cessation of hostilities, for there certainly will not be any such service.

The Flying Public.

In case the above statement might be considered the utterance of a pessimist, I must point out that I am not a pessimist—nor, by the way, an optimist—but merely quite matter of fact in my opinion on aeronautical matters. I am not the least keen on flying *qua* flying, nor have I any objections to it. It is going to be a thing of very considerable magnitude one of these days; there can be no doubt about that. Until, however, many obstacles have been overcome, many prejudices overruled, and probably many lives lost, there will be no universal flying.

The reasons that prompt me to say this are as follows:—Flying is not safe, though one of these days it may be, and while we are waiting for the absolutely safe flying machine we might just as well endeavour to breed up a race of youngsters who consider it part of their daily round to take these risks. As a matter of fact, the records of our Flying Services show that these youths exist in large numbers; but they do not form more than 5 per cent. of the Travelling Public.

In other words, the man in the street will not freely and unstintingly risk his neck in aviation as it stands to-day, though the youngsters probably will. Thus, until some decades have passed, until our Flying Public are composed of men and women born to the hum of the airscrew, it will be a very small Public indeed for which we shall have to cater. And as this change of mentality is taking place in course of years, so will we slowly evolve a safe flying machine. Then, perhaps, we shall really see universal flying, for passengers.

Mileage Risks.

On the other hand, the element of personal risk does not come into it for mails, the transportation of which will be much more rapidly developed. While thus writing upon the risk, and the application of the word "safe" to the flying machine, it may be mentioned that there is only one fatality for every 125,000 miles flown, according to official statistics.

This proves that flying is much safer than it looks, and not very much else. If we go into railway statistics, we find that the Underground carried ninety odd million passengers an average of some two miles each in 1914 without any fatalities at all, a standard of safety that the aeroplane does not as yet attain.

International Obstacles.

Some further obstacles will yet have to be circumvented in the way of International Law, way-leaves, customs examinations, investigation of winds and weather, surveys, etc. And, on top of that, we shall have a considerable amount of engineering work to do in the actual laying out of the tracks, the erection of buildings, stores, petrol depots, landing lights, wireless, piers, jetties, hauling-up slips, and many other requisites. This will take time, and incidentally money.

Then, again, no one has yet designed, built, and *proved* a commercial machine. That will also take time, for the machines of to-day, though they contain basic principles which will serve the purpose, are not intended for commerce. Nor does anybody know with a certain knowledge based upon audited accounts how much a machine will cost to run. About two years' recorded figures should be available to give this with any accuracy.

The Commercial Aeroplane.

In fact, the machine most suited to commercial work, the aerial Tank, has been far more neglected than the high-speed scout and fighting machine, which latter has attained a very fair amount of efficiency—perhaps 80 per cent., as opposed to the 50 per cent. of the heavy bomber.

It is true that we are miles and miles nearer Commercial Flying than we were in 1914. But we have just learned enough about it to see that it *will be* a commercial proposition, not that it *is* a commercial proposition.

In connection with the carrying of goods by air, it may be argued that this is absolutely out of the question, and will remain so for years to come. *Post-prandial statements to the effect that the carriage of goods by air will be as cheap as by the railway train or steamship should be attributed to either ignorance, pure and simple, or to mendacity of the highest order.*

A Business Basis.

An investigation of the possibility of a parcels delivery service made for a large dispatching house, is worth recording. I give it in conversation form, more or less, as it took place:—

It was only a few days ago that I had an opportunity of discussing this question with the managing director of a very large store. The interview is set forth in the form of question and answer, as the questions asked are to some extent indicative of what is going on in the minds of keen business men with regard to this particular branch of commercial flying.

Managing Director: Good-morning. Please sit down. What can you tell me about flying machines?

Commercial Aviator: Good-morning. I can tell you a great deal. First of all, where would you like me to start?

M. D.: Oh, well. Can you deliver my goods by air?

C. A.: Oh, yes, certainly; at a price.

M. D.: At what price?

C. A.: That depends upon the bulk and weight of goods and the distance.

M. D.: Well, let us say a few hundredweights of soft goods to Edinburgh.

C. A.: If you take a machine capable of carrying, say, 7 cwts. of useful load, it would cost you about £20 at the least to get them from Hendon to Edinburgh.

M. D.: That seems a good deal of money.

C. A.: Yes, it certainly is; but, then, people must be expected to pay for these novelties. In some cases the commodities might stand the cost, and in others they certainly would not. Let me make myself clear. If you wanted to deliver a dustbin to an Edinburgh customer, it would hardly be likely that the urgency of the case would be such that the customer would be willing to pay the extra cost involved, which, in the unlikely event of, say, even five Edinburgh customers all wanting dustbins in a great hurry, would add about £4, or some 200 per cent., to the price of each.

On the other hand, it might happen that some particular and special article, such as full-dress uniform for a levée, or a wedding cake for a sudden and totally unexpected marriage, might be in urgent demand at a few hours' notice. Here the urgency might be of more account than the cost, and the aeroplane would be called into requisition. But these and similar cases would be very few and far between, as you can well imagine; and, even then, there would probably be quite a number of dustbins and wedding cakes available in Edinburgh, though there might be no supply of ready-made uniforms. So, as a commercial proposition for an every-day parcel delivery service, I am afraid there is but little hope that the flying machine will be of real service.

M. D.: Yes, you seem to have hit the nail on the head; and I am rather disappointed at what you say. Wouldn't you organise some kind of a stunt, which, though it might not pay us directly, would give us a good "ad."?

C.A.: Ah, that's quite another matter. I was going to lead up to that. It is quite possible; but that, again, depends upon the bulk of goods, because a service over a scattered delivery area would have little chance of recouping any of the necessary expenditure.

M. D.: Well, now, we can find out all about that in our transport department. Let us go down and see the transport manager.

On arrival downstairs, we found ourselves in a large and airy cave, much like the underground scene in "Chu Chin Chow," but somewhat less ornate. Ferro-concrete, in lieu of glittering jewels, bales of merchandise, as far as the eye can reach, rumbling trolleys, pneumatic delivery tubes overhead, much bustle

and evidence of energy among the fairies (dressed in blue jean smocks and pants).

M. D.: Mr. Bunyon, I want to get some idea as to how our parcels go—the busiest route and the one that carries the most traffic. Can you show us?

Mr. Bunyon (transport manager): Yes, sir, I can show you in a minute, but I do not think that our goods are concentrated on any one place more than another; they go broadcast all over the country. The bills will show you. "Here," shouts Mr. Bunyon, "send Miss Trimby here with last night's debits."

Miss Trimby arrives with a bundle of debits in her hand, and, following the instructions of the Transport Manager, she reads out the first couple of dozen debits:—

1 Eno's Fruit Salts, Brighton; 1 invalid bed table, Porthcawl; 1 bottle Aspirin, Birmingham; 1 pair gent's boots. Plymouth; 5 rolls of bath towelling, Dartford; 1 lb. tobacco, Sheerness; 1 rabbit hutch, Isle of Skye; 2 lbs. H.P. biscuits, Merthyr Tydvil; 9 pairs silk stockings, 3 crêpe de chine blouses, Brighton; 1 broom, 1 mop, 2 lbs. sugar, Andover; 1 gramophone, Portslade; 1 tooth-brush, Merstham; 1 nutmeg-grater, 1 mangle, 1 pair clerical gaiters, Ripon; 1 18-ft. roll of Brussels carpet, Lechlade; 1 packet drawing pins, Leek; 1 aviary, Limerick; 1 roll-top desk, St. Albans; 1 carpet-sweeper, Thurso; 1 gas-cooker, Higham (Kent); 1 jumper, Avonmouth.

C. A.: Thank you; I think that gives me the clue I want. There are hardly two things to the same place, and none of them of any great value, I should say.

M. D.: That's so. (To Mr. Bunyon): "Just cash out the average value of what Miss Trimby has read out to us, and show us the result." (To me): "Those things could never stand the expense, could they?"

C. A.: I should hardly think so, and the limits of the system seem to be somewhere between Skye and Plymouth, which means nearly 1,500 miles for the round trip, say, about £70 or £80. If I counted right, there were 24 items on the list, that is, £3 for each delivery.

Mr. Bunyon: These parcels figure out to £69 4s. 11½d., sir.

M. D.: Thank you. That's nearly £3 each on an average and £3 each for delivery, that's 100 per cent. extra for transport costs.

C. A.: Yes; and what is your average all-over charge for ordinary transport costs?

Mr. Bunyon: Just over 3 per cent., sir.

M. D.: So it does not look very promising, does it?

C. A.: No, as a business proposition the delivery of parcels by air is hardly practical; but to look at it from an advertisement point of view, it is, perhaps, quite feasible, and provided that the length of the journey was not too long, it might be possible to get back a considerable portion of the expenditure by charging a special rate for delivery.

For example, if it costs £2 10s. to send a machine to Brighton, carrying 50 or 60 small parcels, it might perhaps be quite possible to charge 1s. each for special delivery.

No doubt we shall see a good many firms doing this sort of thing before very long as a form of advertisement, but it is most unlikely that it can ever be made to pay as a form of commercial delivery. The figures, as you see, for your ordinary transport charges average about 3 per cent. on the value of the goods, and if delivered by aeroplane they might easily amount to 100 per cent.; but, nevertheless, the novelty will, no doubt, last for some time, and it is in the novelty that the advertising value of the aeroplane may lie.

A Long Shot.

This conversation convinced the Managing Director that the aerial delivery of ordinary domestic goods, though it opens up the advertisement value of the aeroplane (which is quite a different matter), is not yet a commercial operation.

To sum up, then, let the investor put as much as he likes into aircraft to win the war, but when dealing with post-war propositions let him respect that wholesome injunction, "Caveat emptor." Only those with long purses, and those who can go on losing money while gaining experience, should have anything to do with it. It is not the game for the small man, but rather for the "Financing Houses," or even the State, both of whom can go on backing their fancy for years without any return.

To throw cold water on, or to belittle, the efforts of the genuine aero-transport enthusiast has never been my object. Rather do I aim at pointing out that the way of the aero-transportation pioneer will be for many years a thorny one, beset with losses and disappointments, and one only fitted for those who can face financial set-backs.

There is something afoot, no doubt, and the nerves of our International Financiers are on the stretch. One company has been registered (with what capital I do not know) to carry mails from Australia to England, and another from England) to the United States, capital 24,000 pence (this figure looks less insignificant than £100—figure mentioned officially). But in spite of all this registration, before carrying a single letter one has to get permission from the various Postmasters, and they are in no hurry to give their permission for the carriage of mails by a vehicle of whose reliability they have as yet no proof

AN AEROPLANE MAIL.

Mr. Field asked the Postmaster-General whether he has any official information showing that an aeroplane postal service is about to be started between New York and Chicago; and whether he will consider the advisability of starting an aeroplane mail service between London and Dublin.

Mr. Pease replies in the Parliamentary papers: I am aware that mails are being conveyed by aeroplane between certain cities in the United States. The question of establishing aerial mail services between places in the British Isles is being kept in view, but I cannot say when it will be possible to bring any service into operation.

INDIA.

The "Times" correspondent, writing from Simla on Oct. 14th, says that the Government of India is considering a proposal to establish an aerial postal service in India.

U.S.A.

A schedule has been issued by the Post Office Department, New York, giving the times of arrival and departure of the aeroplanes carrying mail. Between New York and Washington the Aerial Mail Service operates with great regularity.

The aeroplane leaves New York every week-day without fail at 12 o'clock noon, and arrives at the Philadelphia field at 1 p.m. and at the Washington field at or before 3 p.m.

On the reverse journey the mail leaves Washington at 11.30 a.m. every week-day; arrives at Philadelphia at 1.10 p.m., and lands at the New York terminus of the route at or before 2.30 p.m.

During the month of August the whole of the route was covered without a miss or any serious delay. The mail from Washington to New York was one hour late once in the month, whereas the fixed schedule for arrival in New York was beaten 14 times. On Aug. 21st the mail aeroplane landed at 1.58 p.m. with the mail which left Washington at 11.30 a.m.

At various stations, business districts, and important hotels in New York City the aerial Mail is collected by motor-cyclists.—R. M.

A ROYAL EXAMPLE.

By their frequent use of aeroplanes, the King and Queen of the Belgians are perhaps, though probably not intentionally, doing something more than serving their own convenience, saving time and showing their confidence in the skill of military pilots. The fact that they appear to have come to regard the aeroplane as a natural means of conveyance across the Channel and for journeys to the redeemed portions of their own country, cannot fail to have its influence on those who still persist in regarding aerial transit as inherently dangerous. One would not suggest for a moment that the presence of danger would deter the King of the Belgians from setting what he believed to be the best possible example to his men, but nobody would maintain that he is under any sort of obligation to risk the life of the Queen as well as of himself. Moreover, a king is not always exactly a free agent in such matters. His life does not belong to himself alone, and he is obliged to take precautions dictated by his advisors, even if they do not tally with his own inclinations. When we find kings and queens travelling by air, apparently because they prefer it to other methods and apparently also without any serious protest being made, we can hardly go on arguing that aerial transit is so dangerous that its use in the sphere of commerce and locomotion would involve risks which passengers would be unjustified in taking. Rather similar arguments may be applied to the case of our own Prince Albert. There was no specially forcible reason to compel his transfer from the Navy to the Royal Air Force. His duties in the Air Service are, of course, executive, but in the natural course of events they entail fairly frequent flights.

NERVE.

From the "Daily Express":—

An air official tells me that he can match the story I told about the engineer who took the photograph of the loose wires on his machine—a few thousand feet up—so that people should know exactly what had happened if he was killed. Here is the companion tale of courage in the air.

The scion of a noble Scottish house was acting as flying instructor to American aviators. A new type of machine was being tested. Three men went up, crashed, and were killed. Without a moment's hesitation the young instructor went into the fourth machine, flew, and came back safely. "I just wanted to find out what was wrong," he said. "So I found out what it was, and put it right in the air."

[It is not common knowledge that new types of aeroplanes in the experimental stage are used for instruction.—Ed.]



CAR NONE THE WORSE AFTER FALLING 60 FEET.

"Sept. 18, 1918.—11-9 A.J. car in the North of Scotland, while rounding a very bad corner, ran over a bank and down it went 60 feet. All the damage was a bent stub axle, and the car is on the road again none the worse."

Q. V. A. McEWAN, 21, Shawpark Street, Maryhill, Glasgow.



The Sign **Arrol-Johnston** of Worth.

The Post-War A.J. Car will further enhance the high-grade reputation of the A.J. Car. If you wish early delivery of the new car, get on the Waiting List.

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A disabled man does not want charity—find him a job.



A.B.C.

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NOEL ROAD
ACTON.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Oct. 31.

COPPER.—The U.S.A. War Industries Board has decided that the present price of Copper, 26c. per lb., shall remain in force until Jan. 1, 1919.

Although the output of Copper does not, at present, show any marked increase, there does not appear to be any cause for alarm.

Producers are seriously discussing peace prospects, and the opinion is that all the available Copper will not be sufficient to meet the demands. It must be borne in mind, however, that there is hardly any Copper whatever being allocated for ordinary peace trades, and the demand for war purposes will practically be nil; it is, therefore, more than likely that there will be ample supplies available.

The position of the home market generally remains unchanged; supplies are regular and prices remain unaltered.

TIN.—This market is very dull indeed, few transactions being recorded. Buyers are probably waiting for the Tin Executive to fix the world-price, the expectation being that this will be less than the present market price. The buying agents for Chinese Tin on behalf of the Allies have now been appointed, the firm being Jardine, Matheson & Co.

Although the stocks held here are low, a fair quantity has recently been received, and the position is fairly favourable. There has been no fluctuation whatever in prices.

Comparative Prices.

To-day, 30th	£334 10 0
A week ago	£234 10 0
14 days ago	£334 10 0

LEAD.—The predominant feature of this market is the shortage of Lead in U.S.A. It is very difficult indeed to obtain supplies, and it is impossible to obtain any metal at all for domestic purposes.

STEEL.—Along with producers of other materials the steel producers are showing a very lively interest in preparations for post-war trade, and the topic is being freely discussed. There is a considerable difference of opinion in many districts. It is thought that while there will be a continued large demand for steel for shipbuilding, the demand for Aircraft Steels will considerably decrease. Furthermore, firms now engaged on Aero Engines will probably change over to their pre-war trade, such as the manufacture of motor-cars and motor vehicles generally.

There is also the question of Steel imports and exports to be taken into account. The problem is very complex, and it is a little premature to attempt to prophesy the probable effects upon markets.

The demand for Aircraft Steel continues unabated, and good supplies are being received. The same remarks apply to High Speed and Cast Steels. Supplies of Steel Sheet are not quite so good. The output is, however, increasing and the position generally is improving.

Official prices remain unchanged.

TIMBER.—Timber supplies continue to show slight improvement, and although the quality has deteriorated considerably, as far as substitutes are concerned, it is much better to have supplies of an inferior substitute than none at all. In some quarters it is thought that the present system of control will remain in force for at least six months after the war ends. May it only be a rumour, one of the many we have been hearing during the past week. The trade has certainly had enough of Timber control.

Supplies of Mahogany are fairly satisfactory.

There is still a great deal of dissatisfaction on account of the low prices which have been fixed for manufactured Plywood. Manufacturers complain that the prices do not allow them to make any profit. This is certainly an exaggeration of the case. The prices are certainly low compared with the prices which were being charged prior to the Control Order being issued. They cannot, however, be considered unreasonable.

Official prices remain unaltered.

FABRIC.—Fabric supplies have declined recently. There does not, however, appear to be any cause for alarm. Cotton tapes are most difficult to obtain, and the position is serious. Constructors should earmark this material and look well ahead; even if the war ended this week it would be some months before the position could improve.

Some weeks ago it was mentioned here that there was the possibility of an increase in the price of Fabric towards the end of the year. Everything indicates that there will be an advance, and in all probability before the end of the year.

AN INGENIOUS MAGNET TESTER.

Mr. George H. Alexander advises that a useful instrument of substantial and finished design has been evolved, to facilitate the inspection and test of shaped permanent magnets, by serving for comparative measurements of flux and stability.

It is claimed for this instrument, the "Magnet-Meter," that it is well adapted for determining, by means of flux tests carried out at intervals, whether magnets are properly aged. Such a test is particularly demanded where magnets are intended for use in connection with the construction of electrical measuring instruments..

A full explanatory list can be obtained on application to Mr. Alexander at Coleshill Street, Birmingham.—R. M.

TANK FITTINGS.

Firms requiring petrol tank fittings would be advised to obtain a copy of the illustrated list of aircraft parts issued by S. A. Lamplugh. This company is under Government control, and all fittings supplied by them are passed by the A.I.D. inspectors, stationed at their works, before despatch.

The list contains 50 pages and gives the various sizes in which the fittings are made, and also an illustration of each article described. On application to S. A. Lamplugh, Ltd., Kings Road, Tyseley, Birmingham, the descriptive list mentioned above will be sent.—R. M.

IRISH FLAX.

The Minister of Munitions has given notice of his intention to take possession of all fibre sowing flax seed imported into Ireland after Sept. 28th, 1918. Full particulars of such seed must be furnished by the importer to the Administrator, Flax Supplies Committee, Belfast. The Minister of Munitions has made a further Order taking possession at fixed prices of all rescutched tow off flax of the 1918 crop grown in Ireland. Persons having or controlling rug, rescrutched tow, pluckings or dressings off the flax of 1917 crop or previous years grown in Ireland must within two weeks make a return in the prescribed form of such stocks to the Administrator, Flax Supplies Committee, Whitehall Buildings, Ann Street, Belfast, to whom all communications should be addressed.

GERMAN TRADE NOTES.

The Hanseatic Aeroplane Works of the well-known pilot Carl Caspar has bought the seaplane branch of the Fokker Company, situated on the mouth of river Trave by the Baltic coast.

The "Frankfurter Zeitung" publishes the news "that compulsory licence for manufacturing the Daimler motor has been bestowed upon the New Automobile Works in Berlin and upon the M. A. Riedinger Engine works by the compulsory licence authorities. A price is thereby fixed, leaving the firms a normal profit."

The information reads somewhat inexact. For the New Automobile Works have turned into the National Motor Works, controlled by the A.E.G. concern that may here have the controversy with the Imperator Co. in the aero-engine manufacture question; and the other firm title looks like a mixing-up of the well-known submarine Diesel engine manufacturers Augsburg-Nuremburg with the initials M.A.N. and of a possible engine department of the well-known balloon manufacturing concern of Riedinger in Augsburg. And, finally, it is not clear whether the reference is of the Mercédès aero-engine or perhaps of some enemy product under present control, ordered out to automobile manufacturers, like, maybe, the Knight valveless motor, as found in the vehicles of the British Daimler Co.?

THE BRITISH GAUGE MANUFACTURERS' ASSOCIATION, LTD.

The British Gauge Manufacturers' Association was registered on Sept. 17th, 1918. The objects of the Association are to encourage, promote and protect the British Gauge Manufacturing Industry, and generally to watch over and protect the interests of the Gauge Manufacturers of Great Britain.

This Association is recognised by Government Departments, amongst which is the Ministry of Reconstruction.

Further information and particulars can be obtained from the Secretary, Mr. A. L. Pailthorpe, at 44, Caxton House, Westminster, S.W.

STOCK LISTS.

(THE ONE WE PREPARE EACH FORTNIGHT.)



AN IMPORTANT ANNOUNCEMENT.

IT HAS COME TO OUR KNOWLEDGE THAT SOME PERSONS ARE CIRCULATING A REPORT THAT "AIRCRAFT SUPPLIES" CONTAINS ONLY A "SPOOF" STOCK LIST—THIS IS A **LIE** AND WE WILL PAY £100 TO ANY WAR CHARITY UPON ANYONE PROVING THAT OUR LIST CONTAINS ANY QUANTITY OF PARTS NOT **IN STOCK** AT THE TIME OF GOING TO PRESS.

"AIRCRAFT SUPPLIES" IS BONA FIDE AND PUBLISHED EACH ALTERNATE TUESDAY.

THE AIRCRAFT SUPPLIES COMPANY, LTD.,
"ASCOL" HOUSE, 125, LONG ACRE, LONDON, W.C.2.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Whitehead's Fairly Active.

Whitehead Aircraft 10 per cent. cumulative and participating ordinary shares have been dealt in fairly often in the neighbourhood of 20s. This is particularly interesting in view of the recent remarks herein on the subject of the absence of any real market in these shares. Those responsible would seem to have taken to heart the criticism in this column. It is to be hoped that the market in the shares will be maintained, because it will be to the credit of those who sponsored the shares and to the advantage of the holders of the shares.

Vickers a Good Investment.

As a whole, aircraft and kindred shares are worried a bit by the war developments and the exaggerated views entertained of the effect of peace conditions on profits. Even Vickers have been drooping; here, however, a supplementary influence was at work, holders of the old shares being disposed to reduce the amount held with a view to taking up the new shares. It was a profitable operation. However, Vickers at 40s. look really cheap as an investment offering a decent return with possibilities of capital appreciation.

One hears, by the way, many expressions of dissatisfaction over certain aspects of the new shares offered by Vickers. Why was it necessary to underwrite this new issue? The shares were offered on exceptionally cheap terms and were assured a complete success. The underwriting commission, therefore, was an unnecessary expense: it was money practically given away, so small was the risk of failure. And why was not the former practice maintained of offering the surplus shares to any other shareholders? This is inexplicable. Shareholders are quite justified in grumbling at the action of the directors.

Swift's Pleasant Bonus.

Swift of Coventry, Ltd., is to be the new name for the Swift Cycle Co., and one surmises the change has been prompted by the development of the business in connection with the war. Quite a good impression is made by the report covering the operations of the year to July 31st.

The profit, after providing for the usual charges and depreciation, etc., and the estimated liability for excess profits duty, exceeds £57,151, and as well as receiving an increased dividend of 10 per cent. against 7 per cent., shareholders receive a bonus of 2s. 6d., equal to a further 12½ per cent. "to effect an average distribution for the years 1914, 1915, 1916, and 1917, to an approximation of 10 per cent. per annum."

A Sound Policy.

The idea of providing the shareholders with a bonus such as this in order to compensate them for the experiences of the war period is really excellent. It should commend itself to other companies that are husbanding their resources in too miserly a manner.

It is sound policy to make adequate preparations, financial and physical, for peace contingencies, but shareholders are first of all entitled to a portion of the bigger war harvest. The Swift Company is not acting rashly, for while it is paying this bonus of 12½ per cent., entailing £12,500, at the same time it is providing £29,551 out of the year's profit for the purpose of writing down the item of goodwill to a total of £30,000.

Big or Little Reserve Funds?

After a glance at the balance-sheet one might suggest, at the risk of being called hypercritical, that the Swift Company might have paid more attention to its reserve fund. This figures at £15,000, which seems small in relation to a capital of £200,000, and a debenture debt of £75,000. Admittedly a big general reserve fund is not everyone's taste: in many cases the reserve fund is so inextricably mixed up with the business that it is simply working capital, and does not constitute a reserve in the ordinary sense of the term.

Taxation is to Blame.

Moreover, in these times of excess profit duty a reserve fund which is completely sunk in the every-day work business has many objections. It is liable for a larger burden of tax, the recognition of which has done more to stimulate the present tendency towards capitalisation of reserve scheme than most people believe. To constitute a reserve available against ordinary contingencies a reserve fund ought to be separately invested. A small fund thus reserved would prove of infinitely greater use in an emergency than a large one risked in the business.

Rumours About Rolls Royce.

Prominent activity and strength has been attained by Rolls Royce shares to the accompaniment of rumours about a further share bonus scheme being proposed. It sounds rather too rich in view of the bonus share given in respect of last year's operations, shareholders, it may be remembered, receiving one new share in respect of every share held. Undoubtedly the company is prospering exceedingly, and its financial position is healthily strong, while the post-war prospects are usually considered to be very encouraging. It transpires that one new share is to be offered at 20s. in respect of each share held: a nice bonus.

Enhanced Dividend Possible.

It is quite possible, however, that the Rolls Royce results of the current year may almost justify the present price of 67s. for the shares. The cash dividend for the previous financial year was 10 per cent., plus the share bonus, while £45,000, against £30,000, was "earmarked" for income-tax account, £50,000 was added to reserve, £30,000 to war contingency account, the only corresponding allocation twelve months early being £20,000 to the debt guarantee fund.

Even then there remained more than £40,000 to carry forward. A substantially larger dividend on the increased capital is highly probable. Assuming that 15 per cent. is paid, the yield on the present price would be equal to only 4¾ per cent., free of tax, equal to about 6 per cent. subject to tax.

Wessex Aircraft.

The Wessex Aircraft & Shipbuilding Co. announces an interim dividend on the preference shares for the nine months ended Aug. 31st at the rate of 10 per cent. per annum, less tax, at 5s. 6d. in the £. This concern was registered in November, 1917, and has an authorised capital of £55,000, divided into 25,000 £1 10 per cent. preference shares and 30,000 £1 ordinary shares.

Whites of Cowes.

The statement that Archibald Mitchelson, of the firm of A. Mitchelson & Co., who was associated with some of the financial operations of the late Lord Rhondda, has acquired a controlling interest in Whites of Cowes, is interesting. J. Samuel White & Co., Ltd., gained fame originally as yacht builders, and latterly for other kind of craft, including fast war vessels, and a few years ago extended their interests to aviation.

A sum of half-a-million is involved in the deal. As a limited liability company, J. Samuel White & Co., Ltd., dates back to 1898, and has an authorised capital of £280,000, one-half being in £10 6 per cent. cumulative preference shares and the other half in £1 ordinary shares. Being still a private concern, no information respecting dividends and profits earned is published.

NEW COMPANIES.

Evans & Yeomans, Ltd.—Private company. Registered Oct. 30th. Capital, £100 in £1 shares. Ironfounders, iron, steel, and general merchants, manufacturers of and dealers in, letters out on hire and hirers of marine engines and motors, airships and flying-machines and the component parts thereof. The subscribers are:—H. C. Harvey, 42, Upper Thomas Street, Birmingham, iron merchant; A. G. Edmonds, 20, Ombersley Road, Moseley, Birmingham, commercial traveller. First director:—H. C. Harvey. Solicitor:—A. A. Ellis, 8, Newhall Street, Birmingham.

General Aircraft and General Engineering Co., Ltd.—Private company. Registered Oct. 31st. Capital £5,000 in £1 shares. To take over the business carried on at 6-10, Dalling Road, Hammersmith, W., as the "General Aircraft Engineering Co.," and to carry on the business of aircraft, electrical and general engineers, etc. The subscribers (each with one share) are:—J. L. Dubois, Vencourt, Hammersmith, W., engineer; Miss S. Regheno, same address. The first directors are:—J. L. Dubois and Ida Regheno Dubois (both Belgian). Registered office: 6-10, Dalling Road, W.16.

SATISFACTIONS, MORTGAGES, AND CHARGES

Bournemouth Aviation Co., Ltd.—Mortgage dated Oct. 3rd, 1918, to secure £1,400, charged on company's interest in freehold land at Ensbury, Dorset, with hangars, etc., thereon, and benefit of three contracts for purchase of adjoining land, subject to existing mortgage and debenture. Holder: W. E. Tucker, Yeovil.

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(*Continued from page 1676.*)

F. G. G Bacon, Oct. 11th; C. G. Urquhart, Oct 12th; J. H. Parry, Oct. 13th; E. L. Vetter, Oct. 14th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—A. S. Licence, Aug. 18th; R. G. Burton, R. B. Clarke, W. V. Moore, E. P. Oakes, K. Field, Sept. 29th; A. D. Rolfe, H. W. Scarnell, C. A. Newham, F. A. Pringle, T. W. Lewis, G. Whittall, G. A. Elliott, C. F. Reynolds, H. A. Paguette, Sept. 30th; A. W. Buck, Oct. 1st; J. H. Hall, Oct. 4th; W. Lowry, Oct. 13th; A. Henderson, S. A. Dilliway, R Harper, Oct. 17th; R. G. Ricketts, B Lones, J. O'Flaherty, J. D. Fullerton, J. M. Sleigh, Oct. 18th, J. S. Clark, Oct 19th; E. E. Carter, Oct. 20th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—A. C. Le Grice, L. G. Cole, B. Lucy, R. S. F. Nickoll, July 6th; A. Bargwanna, July 20th; J. M. Butow, Aug. 3rd: A. C. Gill, Oct. 19th.

Sec. Lt. E. W. Bragg (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (K.B.), Sept. 28th.

The following are granted temp. commns. as Sec. Lts. (K.B.) :—J Carter (Sec. Lt., R.F.A.), Aug. 15th; T. M. Robertson (Sec. Lt., Gord. Highrs., T.F.), Aug. 17th; J. J. Saunders (Lt., R.G.A., T.F.), and to be Hon. Lt., Sept. 12th; R. H. Stanbridge (Sec. Lt., R.G.A., Spec. Res.), A C. Trowse (Sec. Lt., R.F.A., T.F.), Sept 16th; J. Hunt (Sec. Lt., R.G.A.), C. P. Bayne, Sec. Lt., R.G.A., Spec. Res.), Oct. 5th; G. Massey (Sec. Lt., R.G.A., Spec. Res.), Oct. 8th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts (Obsr. Officers) :—S. R. Wells, April 5th; G. B. Pike, Aug. 8th, R. A. Crandall, Aug. 15th; P. A. Black, Sept. 30th; W. S. Roberts, Oct. 3rd; E. A. Hearne, Oct. 7th; J. K. Ferguson, Oct. 12th; L. P. J. Dion, Oct. 14th

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—G. T. Reid (Capt., Can. Fors. Corps, C.E.F.), and to be Hon Capt., D. Neil (Lt., Can Fors Corps, C.E.F.), and to be Hon. Lt., April 1st.; L. S. Black (Sec. Lt., R.F.A., Spec. Res.), April 10th; C. W F. Busk (Lt., R.E.), and to be Hon. Lt., G. R. Crosfield, D.S.O. (Maj., S. Lan. R., T.F.), and to be Hon. Maj., Sept. 29th; E. Crewdson, M.C. (temp Maj., R.E.), and to be Hon Maj., F. I. Hansell (temp. Lt., Linc. R.), and to be Hon. Lt., A. H Darnborough (temp. Lt., W Yorks R.), and to be Hon Lt., H. O. F. B. Blew (Lt., K. Suss. R.), and to be Hon Lt., E. B. Green, M.C. (temp. Lt., Devon R.), and to be Hon. Lt., Sept. 30th; A. Holland (Lt., R. Suss. R., T.F.), and to be Hon. Lt., Oct. 1st; C. B. Crawford, Lt., Oxf. and Bucks L.I.), and to be Hon Lt., W. A. Rodger (Lt., Manitoba R.), and to be Hon. Lt., H L. H. Tate (temp. Lt., Middx. R.), and to be Hon. Lt., L. B. Brown (Lt., Can. Fors. Corps), and to be Hon Lt., Oct 3rd; C. Rigby (Sec. Lt., R. Fus., Spec. Res.), B C. S. Eyrne (temp Sec. Lt., R.E.), W. McGowan (Sec. Lt., K.O. Sco. Bord., T.F.), L. W. Morgan (temp. Lt., R.E.), and to be Hon. Lt., F. R. Knight (Lt., Saskatchewan R.), and to be Hon. Lt., G. Carmichael, M.C. (Lt., British Columbia R.), and to be Hon. Lt., W. O. Ryan, M.C. (Capt., R.F.A., T.F.), and to be Hon. Capt., P. E. Buckingham, M.C. (temp. Lt., R. W. Kent R.), and to be Hon. Lt., T. S. Bustard (temp. Lt., A.S.C.), and to be Hon. Lt., E. S. Davison (temp. Lt., R.E.), and to be Hon. Lt., W. N. Hanna (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., W. G. Davis (Sec. Lt., R. W. Kent R., T.F.), C. Fry (Sec. Lt., R F.A., Spec. Res.), V. Harmer (temp. Sec. Lt, Welsh R.), D. Jones (Sec Lt., Glouc. R., T.F.), L. Rickard (Sec. Lt., R.F.A., T.F.), N. Cave (temp. Sec. Lt., R. Suss. R.), H. B. Kennedy (Lt., Can. F.A., C.E.F.), and to be Hon. Lt., S. Horscroft, M.C. (temp. Sec. Lt., R Suss. R.), C. H. G. Sanders (temp. Sec. Lt., E. Kent R.), L. J. Shepard (Sec Lt., R.F.A., Spec. Res.), R. A. Neilson (Lt., Can F.A., C.E.F.), and to be Hon. Lt., C. Fenton, M C. (temp. Lt., R.F.A.), and to be Hon Lt., Oct 3rd, W. Partridge (temp. Sec. Lt., Dur. L.I.), W. Leake (Sec. Lt., Bord. R., T.F.), J. Withers (Sec. Lt., Gord. Highrs., T.F.), E Leicester (Sec. Lt., Leic. R., Spec. Res.), Oct. 4th; W. Steel (Sec. Lt., R. Scots, T.F.), P. N. Melitus (Lt., R. War. R.), and to be Hon. Lt, Oct. 8th; C. M. Donald (Sec. Lt., Lond. R., T.F.), B. E. Essex (Sec. Lt., Suff. R., Spec. Res.), J. B. Fletcher (Sec. Lt., S. Lan. R., Spec. Res.), B. J. Paget (Lt., Dorset R., Spec Res.), and to be Hon. Lt., A. W. Rogers, M.M. (Sec. Lt., R. Wilts Yeo., T.F.), G. W. Webster (Sec. Lt., Gord. Highrs., T.F.), A. E. Copland (Capt, Can. F.A., C.E.F.), and to be Hon. Capt., K. Welton (Lt., Can. F.A., C.E.F.), and to be Hon. Lt., F. B. Walls (Lt., C. Ontario R., C.E.F.) to be Hon. Lt., Oct. 10th; L. H. Proctor (Sec. Lt., A.S.C.), H. W. Harper (Sec. Lt., A. Cyclist Corps, T.F.); A. Boyes, M.C. (Lt., Manitoba R., C.E.F.), and to be Hon. Lt.; F. G. Willis (temp. Sec. Lt., Labour Corps), R. H. Owens (Lt., R.G.A., Spec. Res.), and to be Hon Lt., W. G. Humphries, M.C. (Lt., C.F.A., C.E.F.), and to be Hon. Lt., C. H. Brazier (temp. Sec Lt., R. Berks R.), W. A. Mevrick, M.M. (Lt., Quebec R., C.E.F.), and to be Hon. Lt., G. E. W. Stevens, M.C. (Sec. Lt., E. Kent R., T.F.), R. P. H. West (Sec. Lt., Glouc. R., Spec. Res.), F. C. Hinksman (Sec. Lt., R. War. R., T.F.), E. D. Burke, (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., W. H. Adderley (temp. Sec Lt., W. Rid. R.), C. S. Preston (temp. Lt., R. War. R.), and to be Hon. Lt., H. T. J. Hynes (Sec Lt., R G.A.), Oct. 12th; D. E. Preece (temp. Lt., Bedf, R.), and to be Hon. Lt., J. E. Radley (temp. Lt., Essex R.), and to be Hon. Lt., J. D. Todd (temp. Sec. Lt., Northd. Fus.), Oct. 16th; P. D. Mitton (Sec. Lt., N. Lanc. R., T.F.), J. G. Prestwich (temp. Sec. Lt., A.S.C.), Oct. 17th; A. Rothfield, M.C. (temp. Lt., Durh. L.I.), and to be Hon. Lt., A. Powell (temp. Lt., Lanc. Fus.), and to be Hon. Lt, E. B. Henderson (Lt., C. Ontario R., C.E.F.), and to be Hon. Lt., J. H. Currie (Lt., High. L.I.), and to be Hon. Lt., A. Niven (temp. Lt, R. Scots), and to be Hon. Lt., Oct. 19th; P. R. Ambrose (Lt., Essex R., T.F.), and to be Hon. Lt., E. P. W. Dyke (temp. Sec. Lt., York and Lanc. R.), H. G. Dixon (Sec. Lt., Dorset R., Spec. Res.), Oct. 20th; W. A. Taunton (temp. Sec. Lt., Essex R.), Oct. 29th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—G. M. Whitaker, Oct. 10th; C. G. Prior, Oct. 11th; E. C. Robbins, Oct 17th; R. C. Wachett, Oct. 19th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—C. H. B. Price, Oct. 5th; L. W. Beck, W. L. Tuck, W. C. Hart, J. G. Elcombe, Oct. 21st; A. Y. Paton, D.C.M., E. C. Eastwood, S. E. Pays, R. F. Daglish, H. R. Powell, J. Smethurst, E. F. Sedgwick, C. D. Ball, M.M., H. C. Steele, T. H. O'Connor, M.M., H. A. Gibson, C. A. Chisholm, H. Roberts, Oct. 22nd.

The following Prob. Flt. Officers (late R N.A.S.) are granted temp. commns. as Sec. Lts. (S.) :—E. B. Hyndman, R O. Cutler, Oct. 9th.

Lt F. J. de Beaufort-Suchlick (Sec. Lt. Northn R.) relinquishes his comm. on ceasing to be empld., Oct. 1st

Capt. W. S. Anderson relinquishes his comm. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Nov. 2nd.

Capt. L. E. Brown relinquishes his comm. on account of ill-health, and is granted the hon. rank of Capt., Nov. 2nd.

Lt. R. J. F. Wells relinquishes his comm. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Nov. 2nd.

The following Lts. relinquish their commns. on account of ill-health and are granted the hon. rank of Lt. :—H. L. Brown, W. Thompson, Nov. 2nd.

Lt. A. E. R. Aldridge relinquishes his comm. on account of ill-health caused by wounds and is granted the hon rank of Lt., Nov. 2nd.

Lt. H. H. Bigley resigns his commn., Nov. 2nd.

The following Sec. Lts. relinquish their commns., on account of ill-health, and are granted the hon. rank of Sec. Lt. :—G. W. Cochrane, A McL. Shields, Nov. 2nd.

Sec Lt. R. G. Nunn resigns his commn., and is granted the hon. rank of Sec. Lt., Nov. 2nd.

The following Sec. Lt. relinquishes his commn., being physically unsuited for the duties of Pilot or Obsr. :—C. A. L. Stanfeld, Nov. 2nd.

The date of appt. of Flt. Cadet J. D. Sloss is antedated to June 11th.

The surname of Lt. (actg. Capt.) F. J. Cunninghame is as now described and not as in "Gazette," Sept. 27th.

The surname of Sec. Lt. (actg. Capt.) G. M. Lawson, M.C., is as now described and not as in "Gazette," Oct. 4th.

ADMINISTRATIVE BRANCH.—L. A. Burrows (Maj., Res. of Officers) is granted a temp. commn. as Maj. and to be actg. Lt.-Col. while empld. as Lt.-Col., Oct. 1st.

Sec. Lt. (actg. Capt.) T. H. McArthur to be actg. Maj. whilst empld. as Maj., from S.O., Oct 8th.

Capt. W. G. Chapman to be Capt., from (T.), Oct. 10th.

Lt. C. E. Crowne to be actg. Capt (graded for purposes of pay as a S.O., 3rd Cl.) whilst empld. as Capt., April 15th.

Lts. to be actg Capts. whilst empld. as Capts. :—J. S. Anderson, from (A.), April 1st; (Hon. Capt.) J. D. Lyons, Aug. 1st; S. Curnington, Sept. 30th; C. F. J. North, from (O.), Oct. 18th; Sec. Lt. J. H. Furniss to be actg. Capt. whilst empld as Capt., Oct. 1st.

The following are granted temp. commns. as Lts. :—H. C. Calvert (temp. Lt. and Qrmr., Spec. List), July 1st; G. I. Larkins (temp. Lt., W. Yorks R.), July 18th; H. Townsend (Lt., High. L.I.), July 23rd; D. F. H. Greville-Smith (Lt., Middx. R.), Sept. 1st; D. E. Mozley, M.C. (Capt., Glouc. R.), and to be Hon. Capt., Sept. 21st; H. M. Beckwith-Towse (Lt., K. Lpool. R.), Sept. 23rd, M. O'Loughlin (Lt., Conn. Rang.), Sept. 25th; T. T. Pickup (temp. Lt., A. O. D.), J. P. Sheridan (Lt., N. Lancs. R.), Sept. 27th; H. F. J. Capelli (Lt., Oxf. and Bucks L.I.), P. J. Home-Rigg (Capt., Fife and Forfar Yeo., and to be Hon. Capt., Sept. 30th; R. W. Coop, M.C. (Lt., R.A.F., S.R., Oct 1st; S. J. House (temp. Lt., York R.), Oct. 9th; T Griffiths (Lt. and Qrmr., Brecknock Bn., T.F.), Oct. 10th; F. C. Lynch-Blosse (Lt., Ir. Gds.), R. A. Shepheard-Walwyn (actg Capt., W. Yorks R.), and to be Hon. Capt., Oct. 11th; G. S. Seabrooke (Lt., A.S.C., T.F.), Oct. 12th; W. E. Fox (temp. Lt., Tank Corps), A. W. Rouse (Lt., R.D. Corps), Oct. 14th; F. Allen (Capt. and Qrmr., Ches. R.), and to be Hon. Capt., G. E. Gillett (temp. Lt. and Qrmr., Spec List), and to be actg. Capt. whilst empld. as Capt., Oct. 15th; A. Hay (late Capt., R. Sco. Fus.), and to be Hon. Capt., Oct. 17th; G. Harris (Lt. and Qrmr., Northd. Fus.), Oct. 21st Lts. (A.) to be Lts. :—F. P. Watts, Oct 1st; D. M. K. Marendaz, Oct 15th; R. J. Harris, D. K. Sworder, Oct. 26th; L. V Marchant, Oct. 28th; J. B. Finch, Oct. 31st; W. Dee, Nov. 1st; Lt. R. Temple to be Lt., from (K.B.), Sept. 24th.

Lts. (O.) to be Lts. :—J. R. Rissen, Aug. 17th; T. McGovern, Oct. 21st; S. H. Pickles, Oct. 26th.

C. E. Harrison (temp. Sec. Lt., Norf. R.) is granted a temp. commn. as Sec. Lt. and to be actg. Lt. while empld. as Lt., Oct. 11th.

Sec. Lts to be actg. Lts. while empld. as Lts. :—G Baker, May 13th; (Hon. Capt.) R. Jagger, June 1st.

J. F. Bentley is granted a temp. commn as Sec. Lt., Oct. 3rd.

Sec. Lt. C. E. Goodrum relinquishes his commn., and is granted the hon. rank of Sec. Lt., Aug 24th.

Sec. Lt. C. E. King relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Nov 2nd.

Sec. Lt. P. Easter resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Nov. 2nd.

The date of appt. of Maj. (actg. Lt.-Col.) B. O. Jenkins, C.B.E., is May 28th, and not as stated on page 5211 of the "Gazette," April 30th.

The initials of Sec Lt. V. L. Monsell are as now described, and not as in "Gazette," Oct. 22nd.

TECHNICAL BRANCH.—Capt. L. Newman to be actg. Maj. while empld. as Maj., April 1st (substituted for notification in "Gazette," April 19th.

The following are granted temp. commns. as Majs. :—M. C. Rousseau (Maj., Can. For. Corps), Aug. 13th; J. O. James (temp. Maj., Welsh R.), Sept. 1st

Capt. O. C. Williams to be actg. Maj. while empld as Maj., Sept. 25th.

Capt. W. Brass to be Capt., from (K.B.), Sept. 30th.

Sec. Lts. (actg. Lts.) to be actg. Capts while empld. as Capts. :—G. Adams, G. H. Crick, Oct. 31st.

F. B. Adams (Lt., Wilts R.) is granted a temp. commn. as Lt., Oct. 1st.

Sec. Lt. (Hon. Lt.) R. Peel to be actg. Lt. whilst empld. as Lt., Oct. 31st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. :—E. A. Turnbull, July 14th; W. A. Bradwell, July 27th.

Lt. D. M. Baird (Lt., Gord. Highrs.) relinquishes his commn. on ceasing to be empld., Oct. 8th.

Capt. E. Chodwick relinquishes his comm. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Nov. 2nd.

The notification in "Gazette," Sept. 13th, concerning Lt. (actg Capt.) O. M. D. Bell is cancelled.

MEDICAL BRANCH.—Capt. H. A. Treadgold to be actg. Maj. while empld. as Maj., Sept. 2nd.

Capt. A. H. Todd to be actg. Maj. while specially empld., Nov. 2nd.

MEMORANDA.—Capt. G. Disney is granted the hon. rank of Maj., April 22nd.

Capt. G. Urquhart to be actg. Maj. while holding a special appt. at the Ministry of Munitions, Sept. 23rd.

The following Capts. to be actg. Majs. while specially empld. :—C. H. T. Alston, T. P. Searight, May 24th; R. Waddell, Oct. 14th.

Sec. Lt. R. O. King to be actg. Capt. while holding a special appt. at the Ministry of Munitions, May 4th.

Lt. A. L. Johnson to be actg. Capt while empld. as Sub-Section Director, July 22nd.

Sec. Lt. R. F. Brighten to be actg. Capt. (without the pay and allces. of that rank) while specially empld., Oct. 18th.

Lt. W. J. Gleason to take rank and prec. as if his appt. as Lt. bore date Sept. 25th.

AIR MINISTRY, Nov. 2nd.

The King has been pleased to confer the Air Force Cross, and the Air Force Medal, respectively, on the following officers and other ranks of the Royal Air Force, in recognition of valuable flying services performed in their various capacities—flying instructors, test, ferry, and experimental pilots, etc., etc. :—

THE AIR FORCE CROSS.

Capt. R. S. Aitken, M.C. (R.G.A.), Lt A. M. Alexander, Capt A. D. W. Allen, D.S.C

Maj F. C. Baker (D.C.L.I.), Capt. A. G. Bishop (R. Mar.), Lt.-Col. (temp. Brig.-Gen.) A. E. Borton, D.S.O. (R. Highrs.), Capt. N. H. Bottomley (E. Yorks R.), Capt. K. G Boyd, Capt. P. Brend, Sec. Lt. D. L. Brocklesby, Lt. (temp. Capt.) W. Bruce, Lt. (temp. Capt.) P. W. S. Bulman, M.C., Lt R. H. Burrows.

Capt W. H. E. Campbell, Maj. R. H. Carr, D.C.M., Lt W. Catchpole, Maj. H. F. Champion (Rif. Brig.), Lt. C. E. Channing (A.S.C.), Lt. L. Chivers, Capt. B. C Clayton, Sec. Lt S. R. Clutterbuck, Maj. (temp. Lt.-Col.) H. L. Cooper (Hants Yeo.), Capt (temp. Maj.) C. R. Cox (Manch. R.), Lt. J. G. Crang.

Capt. C. B. Dalison, Capt. E. P. M. Davis, Capt. J. F. A. Day, Lt. E. S. Dean, Capt. F G. Dunn, Lt. A. N. Dupont (Leic. R.).

Sec. Lt. (temp. Capt.) Ll. Edwards, Capt H. L. Everitt.

Capt. C. D. Fellowes, M.C. (Staffs. Y.), Capt. A. W. Fletcher, Lt. J. C. Foden, Capt. (temp. Maj.) F. Fowler, D.S.C., Lt.-Col. I. G. V. Fowler, Capt. (temp. Maj.) C. T. Freeman, D.S.C.

Lt. E. J. Garner, Capt. E. S. Goodwin, Capt. N. Grabowsky, Maj. J. B. Graham, M.C., Lt. S. Graham, Capt. S. T. L. Greer (R.A.), Capt. (temp. Maj.) E. O. Grenfell, M.C. (R.G.A.), Capt. I. O. Griffith.

Capt. G. H. Hall (Yeo.), Maj A. T. Harris, Lt. (Hon. Capt.) S. B. Harris, Lt. C. J. W. Hatcher, Sec. Lt. P J. Hayes, Lt. J. Hirst, Capt. G. R. Hodgson, Capt. T. E. B. Howe, Capt. L. F. Hutcheon.

Capt. J. G. Ireland.

Capt. (temp.-Maj.) E. L. Johnston, Capt (temp. Maj.) H. Jullerot.

Capt. W. E. Kemp (R. Lancs R.), Capt H. W. Kendall, Sec. Lt. A. P. Knightbridge.

Capt. C. T. Lally, M.C., Lt. (temp Capt.) J. F. Lawson (R.G.A.), Lt (temp. Capt.) W. W Leete (Ches. R.), Capt P. E. M. Le Gallais (R. Suss R.), Lt. (temp. Capt.) F. Lindsay (Lond. R.), Lt. (Hon. Capt.) J. Line (A.S.C.), Lt. K. B. Lloyd (R. W. Fus.)

Capt. P. E. Maitland, Lt. A. B. Massey, Capt. D. G. McGregor, Capt. F. W. Merriam, Lt. J. R. Moore, Capt. F. W. Musson (N. Lancs. R.).

Sec. Lt. H. A. Nester, Lt. C. H. Noble-Campbell.

Lt. C. Osenton (Can. I.), Lt. W R. Ouiton (Ches. R.), Capt. H. L. H. Owen (Dorset R.).

Capt. J. Palethorpe, M.C., Lt. C. Penn, Capt. (temp. Maj.) L. H. Peter, M.C. (R.E.), Lt. W. H. Poole, M.M., Capt. E. L. Pralle, Lt. H. O. Prout

Capt. C. A. Rea, Lt.-Col. L. W. B. Rees, V.C., M.C. (R.G.A.), Capt. A. C. Reid, Lt. R. R. Richardson, Lt. (temp. Capt.) H. V. Robins, M.C. (K.R.R.C.), Lt. W. S. Rope, Capt. F. Rose (W. Yorks. R.), Capt. H. B. R. Rowell (R.E.).

Capt. T. E. Salt (R. War. R.), Lt. W. Sanderson, Maj. F. E. Sandford, Capt. K F. Saunders, D.S.C., Capt. J. E Scott, D.S.C., Capt. V. R. Scriven, Capt. W. H N. Shakespeare, M.C., Lt. E. A. Simson (R.F.A.), Lt. F. A. Smith, Maj (temp. Lt.-Col.) S Smith, D.S.O. (R.F.A.), Maj. A. Somervail, M.C. (K.O.S.B.), Maj. J. Sowrey, Capt. (temp. Maj.) O. Stewart, M.C. (Middx. R.), Lt. (temp Capt.) J. S. Stubbs (S. Lancs. R.).

Capt. A. G. Taylor (Yeo.), Lt. F. G. Taylor, Capt. S. W. Taylor, M.C., Lt. C. J. Thompson, Capt. (temp. Maj.) H. K. Thorold, D.S.C., Lt.-Col. H. T. Tizard, Lt. A. C. Townend, Lt. J E. Tratman, Capt. E F. Turner.

Maj. G. C. O. Usborne (Can. M.G.C.), Capt. R. H. C. Usher, M.C. (Wilts R.).

Capt S. F. Vincent.

Capt. F. W. Walker, D.S.C., Lt. W. P. T. Watts, Lt. W. G. Westcott, Lt G. R. Whitaker (R.F.A.), Lt. C. G. Wigglesworth, Maj. (temp. Lt.-Col.) E. V. S. Wilberforce, Lt. G. J. Wilde, Capt. (temp. Maj.) J. S. Williams, M.C., Capt. T B. Williams, Capt H. A. Wilson, Capt. J. H. Woolner, Lt. (Hon. Capt.) P. K. C Wright (A.S.C.), Capt. A. M. Wynne.

Lt W. A. G. Young

THE AIR FORCE MEDAL.

No. 206930 Ch. Mech. W. L. Bate (Finchley, N.), No. 227647 Cpl. Mech. J. S Biss (Waltham Abbey), No. 208252 Serjt Mech. R. H. Derry (Peckham, S.E.), No. J23560 Cpl. F. Harris (Eltham, Kent), No. 210361 Cpl. Mech. W. J. J. Hibbert (Battersea, S.W.), No. 217554 Serjt. A. W. Marshall (Holloway, N.), No. 3266 Serjt. Mech H. Mitchell (Renfrew, N.B.), No. 3747 Serjt Mech. R. T. Parry (Ross, Herefordshire), No. J246875 2nd Air Mech. H. Richards (Cranwell), No. 2172 Serjt. Mech. A. L. Robinson (Sheffield), No. 220399 Cpl. A. N. Smith (Blakeney), No. 220551 2nd Air Mech. (W.) A. C. Smith (Stoke Newintgon, N.), No. 204418 Ch. Mech. G. H. Straiton (Gt. Yarmouth), No. F5746 Ch. Mech. I R. Veitch (Camden Town), No. 219731 Cpl. Mech. R. E. Wright (Crouch End, N.).

* * *

The King has been pleased to confer the following awards on officers and other ranks of the Royal Air Force, in recognition of gallantry in flying operations against the enemy :—

A BAR TO THE DISTINGUISHED SERVICE ORDER

Capt. (temp. Maj.) W G BARKER, D.S.O., M.C.

A highly distinguished patrol leader whose courage, resource, and determination have set a fine example to those around him. Up to July 20th, 1918, he had destroyed 33 enemy aircraft—21 of these since the date of the last award (second Bar to the Military Cross) was conferred on him. Maj. Barker has frequently led formations against greatly superior numbers of the enemy with conspicuous success. (D.S.O. gazetted Feb. 18th, 1918; M.C. gazetted Jan. 10th, 1917; first Bar, July 18th, 1917, second Bar, Sept. 16th, 1918.)

THE DISTINGUISHED SERVICE ORDER.

Lt. (temp. Capt.) A. W. BEAUCHAMP-PROCTOR, M.C., D.F.C.

A fighting pilot of great skill, and a splendid leader. He rendered brilliant service on Aug. 22nd, when his flight was detailed to neutralise hostile balloons Having shot down one balloon in flames, he attacked the occupants of five others in succession with machine-gun fire, compelling the occupants in each case to take to parachutes. He then drove down another balloon to within 50 ft. of the ground, when it burst into flames. In all he has accounted for 33 enemy machines and seven balloons. (M.C. gazetted June 22nd, 1918; Bar to M C, Sept. 16th, 1918; D.F.C. gazetted July 2nd, 1918.)

Lt (temp. Capt.) H. J. BURDEN, D.F.C. (Can. Forestry C.).

Since joining his squadron in February this officer has accounted for 17 enemy machines—12 crashed, two driven down out of control, and three destroyed in flames on the ground during an attack on an aerodrome. On the morning of Aug 10th he led his patrol in three attacks, and himself destroyed three enemy machines. In the evening of the same day he destroyed two more. Two days later he attacked a large number of Fokkers, seven of which were destroyed, accounting for three himself. In this encounter Capt. Burden led his patrol with exceptional skill and daring. (The award of the D.F.C. is also announced in this "Gazette.")

Lt. W. G. CLAXTON, D.F.C.

Between July 4th and Aug. 12th this officer destroyed 10 enemy aeroplanes and one kite balloon, making in all 30 machines and one kite balloon to his credit Untiring in attack in the air or on the ground, this officer has rendered brilliant service. (D.F.C. gazetted Aug 3rd, 1918; Bar to D.F.C., Sept. 21st, 1918.)

Lt. (temp. Capt.) A. H. COBBY, D.F.C. (Australian F.C.).

On Aug. 16th this officer led an organised raid on an enemy aerodrome. At 200 ft. altitude he obtained direct hits with his bombs and set on fire two hangars; he then opened fire on a machine which was standing out on the aerodrome. The machine caught fire. Afterwards he attacked with machine gun fire parties of troops and mechanics, inflicting a number of casualties On the following day he led another important raid on an aerodrome, setting fire to two hangars and effectively bombing gun detachments, anti-aircraft batteries, etc. The success of these two raids was largely due to the determined and skilful leadership of this officer. (D.F.C. gazetted Aug. 3rd, 1918; first and second Bars, Sept. 21st, 1918.)

Lt. S. D. CULLEY (Sea Patrol).

Ascended to a height of 19,000 ft., at which altitude he attacked an enemy airship and brought it down in flames completely destroyed. This was a most difficult undertaking, involving great personal risk, and the highest praise is due to Lt. Culley for the gallantry and skill which he displayed.

Sec. Lt. T. B. DODWELL.

On a recent occasion this officer, when acting as observer, performed a very gallant and meritorious action. In diving to the assistance of another machine, his own machine commenced to fall out of control. Despite this, he continued to engage three enemy machines that were attacking him, and eventually drove them off, an operation that called for great coolness and skill, as the shooting platform was most unsteady. Realising that the machine was out of control owing to the loss of lift in the tail plane, half of this being shot away, he left his cockpit, and, climbing along the wing, lay down along the cowling in front of the pilot, enabling the latter to obtain partial control of the machine and head for home. When nearing the ground he climbed back into his cockpit to allow the nose to rise, and the pilot succeeded in safely landing. The presence of mind and cool courage of this officer undoubtedly saved the machine, and deserve the highest praise

Lt. (temp. Capt.) C. E. HOWELL, M.C., D.F.C.

This officer recently attacked, in company with one other machine, an enemy formation of 15 aeroplanes, and succeeded in destroying four of them and bringing one down out of control. Two days afterwards he destroyed another enemy machine, which fell in our lines, and on the following day he led three machines against 16 enemy scouts, destroying two of them. Capt. Howell is a very gallant and determined fighter, who takes no account of the enemy's superior numbers in his battles. (M.C. gazetted Sept. 16th, 1918; D.F.C. gazetted Sept. 21st, 1918.)

Lt. (temp. Capt.) J. I. T. JONES, M.C., D.F.C., M.M.

Since joining his present brigade in May last this officer has destroyed 28 enemy machines. He combines skilful tactics and marksmanship with high courage While engaged on wireless interception duty he followed a patrol of nine Fokker biplanes, and succeeded in joining their formation unobserved. After a while two Fokkers left the formation to attack one of our artillery observation machines. Following them, Capt. Jones engaged the higher of the two, which fell on its companion, and both machines fell interlocked in flames. (M.C. gazetted Sept. 16th, 1918; D.F.C. gazetted Aug. 3rd, 1918; Bar to D.F.C., Sept. 21st, 1918; M.M. gazetted Aug. 10th, 1916.)

Capt. A. H. WHISTLER, D.F.C. (Dorset R.).

During recent operations this officer has rendered exceptionally brilliant service in attacking enemy aircraft and troops on the ground. On Aug. 9th he dropped four bombs on a hostile battery, engaged and threw into confusion a body of troops, and drove down a hostile balloon, returning to his aerodrome after a patrol of one and a half hours' duration with a most valuable report. He has in all destroyed 10 aircraft and driven down five others out of control. (D.F.C. gazetted July 2nd, 1918.)

A BAR TO THE DISTINGUISHED FLYING CROSS.

Lt. H. B. DAVIES, D.F.C.

During recent operations this officer helped to silence an enemy anti-tank battery, and inflicted heavy casualties on troops and transport. On the following day while on contact patrol his pilot was severely wounded. Lt. Davies took control and brought the machine home safely, having obtained most valuable information as to the position of our patrol. This officer is conspicuous for his courage and coolness in action. (D.F.C. gazetted July 2nd, 1918.)

Lt. (temp. Capt.) T. F. HAZELL, M.C., D.F.C.

This officer has accounted for 27 enemy machines and four kite balloons. On Aug. 8th he shot down two machines out of control, and destroyed a third in the air. In these combats he was so heavily engaged that all his instruments were wrecked, and only one strand of his elevator control cable was intact. Relentless in attack, Capt. Hazell displays disregard of personal danger to a marked degree. (The award of the D.F.C. to this officer is also announced in this "Gazette." M.C. gazetted July 26th, 1918.)

Lt. (temp. Capt.) C. R. R. HICKEY, D.F.C., Sea Patrol (Can. Mtd. Rif.).

A very determined air fighter who has destroyed seven enemy machines and brought down nine completely out of control during the past three months. His skill and initiative as a flight commander have made his flight very successful. Last month he destroyed two machines and brought down two more out of control in one day, and the remainder of his flight at the same time succeeded in disposing of several more enemy aircraft without sustaining any casualties. (D.F.C. gazetted Aug. 3rd, 1918.)

Capt. R. HILTON, M.C., D.F.C. (R.G.A.)

A most courageous and determined officer who has rendered valuable service on low reconnaissances On Aug 8th, after dropping bombs to form smoke screens, he was attacked by five scouts; his observer was wounded, but Capt. Hilton, flying at an extremely low altitude, with great skill evaded his pursuers and landed safely His machine was so badly damaged that it had to be replaced. (D.F.C. gazetted Sept. 21st, 1918. M.C. gazetted June 3rd, 1916.)

Lt. (temp. Capt.) S. C. JOSEPH, D.F.C. (Sea Patrol).

A very gallant and skilful officer. He led his formation under a large force of enemy aircraft with a view to inducing them to descend to attack him. In this *ruse de guerre* he was successful, and, in accordance with arrangements previously made, another formation of our machines then appeared on the scene, and a combined attack was made on the enemy, resulting in the destruction of four aeroplanes and three more being brought down completely out of control. Since the award of the Distinguished Flying Cross was conferred on this officer less than two months ago he has personally destroyed one enemy machine, brought down another out of control, and has helped to destroy a third. Capt Joseph was wounded on the occasion of the combined attack. (D.F.C. gazetted Sept. 21st, 1918.)

Lt. (temp. Capt.) S. M. KINKEAD, D.S.C., D.F.C

On a recent date this officer engaged a large party of troops in a

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wood. The engagement lasted for an hour, but so persistent was his attack that the enemy finally broke and dispersed. During this attack he was harassed by six hostile scouts. Later on he shot down an enemy two-seater in our lines. A bold and daring aviator. (D.S.C. gazetted Feb. 22nd, 1918. D.F.C. gazetted July 2nd, 1918.)

Sec. Lt. (Hon Lt.) G. N. Thomson, D.F.C. (H.L.I.).
This officer showed great daring during a recent counter-attack by the enemy. Flying at a height of 100 feet, he engaged the advancing troops, and rendered the greatest assistance in bringing this attack to a standstill and inflicting very heavy casualties. On the conclusion of this engagement he continued his patrol along the corps front, obtaining most valuable information. (The award of the Distinguished Flying Cross is also announced in this "Gazette.")

Lt. (temp. Capt.) C. J. Venter, D.F.C.
A brilliant patrol leader who has since May last destroyed 11 enemy machines. In an engagement between six of our machines and nine of the enemy, five of the latter were destroyed, Captain Venter accounting for one. Later on the same day he, in company with three other officers, engaged four Fokkers. In the combat that followed all four enemy machines were destroyed, this officer shooting down one. (D.F.C. gazetted Aug. 3rd, 1918.)

Lt. (temp. Capt.) J. L. M. White, D.F.C. (Can. M.G.C.),
In company with another pilot this officer recently attacked a hostile formation of 14 scouts. One of these he shot down in flames, and a second out of control. Captain White not only displays courage and skill of a high order in attacking machines in the air and troops on the ground, but he has rendered excellent service on reconnaissance duty, obtaining most valuable information. (D.F.C. gazetted Aug. 3rd, 1918.)

Lt. H. N. Young, D.F.C.
In a recent engagement this officer displayed marked courage and determination. He bombed and silenced an anti-tank battery, and then attacked some motor transport, destroying four lorries. Later on he engaged with machine-guns enemy troops and transport, causing a stampede, returning to our lines with a most valuable report as to the position of our troops. Unfortunately, on the following day he was seriously wounded. (D.F.C. gazetted July 2nd, 1918.)

The Distinguished Flying Cross.

Sec. Lt. C. F. Ambler (R. Ir. Fus.).
This officer has rendered most valuable service on photographic and other reconnaissance duty. He displays indomitable courage and perseverance, notably on a recent photographic reconnaissance, when his machine was fiercely attacked by seven Fokker biplanes. In the face of intense fire he continued to serve his guns with coolness and precision, but was compelled twice to retire from the area; exhibiting dogged determination, he returned on each occasion and eventually drove off the enemy aircraft and obtained the requisite photographs. His machine was riddled with bullets.

Sec. Lt. A. M. Anderson (Observer, No. 6 Squ.).
This officer performed most gallant and meritorious service on Aug. 21st when on contact patrol. In the morning flying in the mist at 200 feet, and subjected to heavy hostile fire, he located our cavalry and the enemy positions. In the afternoon he made a most valuable and accurate report and situation map. While on this duty his pilot was wounded and forced to land just west of our lines; Lt. Anderson extricated him from the machine under heavy fire and carried him to a dressing station.

Lt. R. C. Armstrong (Australian Flying Corps).
During recent operations this officer was engaged in reconnoitring a certain area at low altitude; receiving no response to his repeated calls to our infantry for flares, owing to the supply being exhausted, he descended even in a lower altitude in order to recognise and locate our troops, and so completed an accurate and detailed report of the area, displaying gallantry and determination of a high order, for he was subjected to intense machine-gun fire during the whole time.

Capt. R. N. G. Atkinson, M.C.
A gallant and determined officer whose services over the lines since May last in long-distance and photographic reconnaissances, and as leader of bomb raids have been of a very high order. On a recent occasion when on solitary photographic reconnaissance at 15,000 feet, his machine was attacked by eight Fokker biplanes; one of these he shot down. (M.C. gazetted Oct. 18th, 1917.)

Lt. H. Axford (Can. Inf.).
On Aug. 16th this officer led his formation to bomb certain docks; these docks were exceptionally well guarded, and our planes were heavily handicapped by adverse weather conditions; moreover, the formation had suffered casualties, and his own machine was badly damaged; he nevertheless succeeded in reaching and bombing his objective in the face of an intense barrage. On the following day he again successfully bombed the same objective. Lt. Axford has taken part in 34 successful bomb raids, inspiring all who serve with him by his personal courage and intense devotion to duty.

Lt. T. L. Baillieu (Australian Flying Corps).
On a recent reconnaissance this officer, owing to low visibility, was compelled to descend to a height of from 20 to 100 feet in order to locate our troops; this he succeeded in doing, and after flying for an hour and a half at this low altitude, he returned with an accurate report of the situation in that area. Returning a few hours later, he obtained further information regarding the line in that locality, though exposed to heavy machine-gun fire.

Lt. L. K. Baker.
Whilst engaged in making a reconnaissance of our advanced line, this officer was severely wounded in the thigh. Fearing, on his return journey, that he would be unable to reach his aerodrome owing to exhaustion due to loss of blood, he landed near a main road. He refused to allow his wounds to be attended to until he had written and dispatched by motor-cyclist a clear and concise report of the position of our lines, showing devotion to duty worthy of high praise.

Lt. R. B. Bannerman.
During recent operations this officer has done gallant service. While on an offensive patrol with two other machines he was attacked by several Fokker biplanes, and in the engagement he shot down one. In addition he has destroyed four other enemy machines.

Lt. H. D. Barton.
A courageous and dashing officer who has accounted for 14 enemy machines, destroying two, forcing two to land in our lines, and driven 10 down out of control. In addition he has destroyed a kite balloon which was flying at a height of 500 feet; engaging it at close range he drove it down in flames.

Lt. (temp. Capt.) G. G. Bell (E. Ontario R.).
This officer has had numerous engagements with hostile aircraft, invariably displaying marked gallantry and leadership of a high order, notably on June 1st, when he, accompanied by another pilot, attacked a formation of 12 enemy scouts; he shot down one in flames and drove down others out of control, only breaking off the engagement when all his ammunition had been expended.

Lt. R. C. Bennett.
This officer has carried out 37 bomb raids, 12 photographic flights, and 11 reconnaissances. In many of these operations he has met with serious opposition, and frequently adverse weather conditions have greatly interfered with his work. Gallantly and doggedly he has faced all difficulties and has rendered most valuable service.

Capt. F. Billinge, Manch. R.
A gallant officer who displays determination and judgment. When on a night reconnaissance his engine suddenly failed and he was compelled to head for home. At this moment he was attacked by an enemy aeroplane. Owing to engine trouble he was forced to avoid an engagement, and only escaped by the exercise of marked skill and resource. With great difficulty he managed to cross our trenches at a height of 200 feet, crashing into the reserve trenches behind. Although considerably shaken and bruised, he and his observer proceeded to the nearest signal station and sent in their reconnaissance report.

Lt. (temp. Capt.) W. O Boger (Strathcona's Horse).
This officer has taken part in 28 offensive patrols and 12 combats, accounting for four enemy aeroplanes—two destroyed in flames and two driven down out of control. As a leader he shows marked coolness and bravery, notably on a recent patrol when, as he was leading his four machines, he saw nine Pfalz scouts. Unable to rise to their height, he led his patrol just beneath them in order to tempt them to attack. As the enemy did not respond he repeated the manœuvre; the scouts then came down and in the engagement one was shot down out of control. Reforming his patrol, he met two more scouts, one of which he destroyed in flames.

Lt. (temp Capt.) C. Bowman.
A fine leader, conspicuous for his courage and cool judgment, who has taken part in over 50 bombing raids, in the majority as leader. On one occasion the formation he was leading was attacked by 15 Fokkers. In spite of the determined efforts on the part of these hostile machines the objective was successfully bombed, direct hits being obtained. By skilful manœuvring the formation returned safely, having destroyed four enemy aeroplanes during the flight. On the evening of the same day when again leading an attack on the same objective the formation was attacked by 20 hostile machines; having destroyed four of them he brought the formation safely back over our lines.

Sec. Lt. S. A. Brabner, Sea Patrol.
An observer officer who has set a high example by his keenness and devotion to duty on night flying. He has been engaged in 21 bombing raids in a period of three months.

Lt. (temp. Capt.) R. C. B. Brading.
This officer has accounted for seven enemy machines—two shot down in flames and five out of control. In addition he has displayed marked skill and bravery in attacking troops and transport. Four times in one day he engaged troops, etc., on the roads with machine-gun fire, inflicting casualties and causing great confusion.

Lt. (temp. Capt.) S. G. Brearley (Australian Flying Corps).
During recent operations information as to the rear disposition of enemy troops in a certain sector was urgently required. To obtain this Capt. Brearley proceeded over the enemy lines in the face of heavy anti-aircraft fire to a distance of 12,000 yards at an altitude of only 1,800 feet. He, assisted by his observer, made an extensive reconnaissance, and brought back a most accurate and detailed report, which proved of the greatest value. The work of this officer is invariably reliable and accurate.

Lt. (temp. Capt.) D. R. Brook.
On the night prior to one of our attacks this officer was detailed for a very important duty which entailed his patrolling a certain portion of our advanced lines. The weather was so unfavourable that under ordinary circumstances no flying would have been attempted, the clouds being only some 200 ft. above the ground, and, in addition, there was a thick ground mist. Under these adverse conditions flying could only be carried out with great risk. Regardless of this, with rare courage, Capt. Brook made three flights up and down our front line. He has carried out 68 successful night bombing raids, at all times proving himself a bold and determined aviator.

Lt. J. M. Brown (35th Sqdn.).
This officer has shown exceptional skill and courage in obtaining oblique photographs of enemy positions during recent operations. These photographs were of vital importance in carrying out our attack; realising this Lt. Brown, despite most adverse weather conditions, succeeded in taking them and they were of the greatest value to our troops. His conduct is deserving of the highest praise.

Lt. R. F. Buick.
A most able officer who has carried out a number of successful shoots in co-operation with our artillery, resulting in serious damage to the various objectives. He has also taken a large number of valuable photographs. In these services Lt. Buick is deterred by no difficulties, whether due to adverse weather conditions or hostile opposition, displaying at all times gallantry and marked determination.

Lt. (temp. Capt.) H. J. Burden (Can. Forestry C.).
This officer took a prominent part in a most successful low bombing attack on an aerodrome. He obtained a direct hit on the objective allotted to him. He further set fire to three enemy machines on the ground with machine-gun fire. On the return journey he attacked a canal boat, in each case flying at a very low altitude. A gallant and able patrol leader, who has destroyed three enemy aeroplanes and driven one down out of control, in addition to the three destroyed on the ground. (The D.S.O. awarded to Capt. Burden is also announced in this "Gazette.")

Lt. E. A. Burn
This officer has taken part in 34 successful raids and carried out 7 long-distance reconnaissances, displaying marked determination and devotion to duty. On one patrol his machine was badly damaged, both upper longerons being completely severed. Despite this he flew for another hour and completed the patrol. On another occasion he was attacked by two Fokker biplanes; one he drove down out of control. He was then compelled to land in "No Man's Land," his engine having cut out. He and his observer eventually reached our lines, having spent two hours in "No Man's Land."

Lt. (actg. Fl. Comdr.) M. H. Butler, (Sea Patrol).
Has carried out 24 bombing raids in a period of three months, and has also been very successful in obtaining valuable information by night as to enemy movements. He is an excellent Flight Commander, and has always displayed great keenness in the execution of his duties.

Lt. (temp. Capt.) R. D. CALEY.
Between July 1st and 26th this officer carried out 44 most successful shoots, displaying remarkable skill, keenness in observation, and courage. In a flight lasting three and a-half hours, in spite of most adverse weather conditions and in face of anti-aircraft fire, he directed three counter-battery shoots with most satisfactory results, heavy damage on enemy positions and explosions being observed.

Sec. Lt. (temp. Lt.) E. H. CANNING (Glouc. R.).
This officer has displayed marked courage and skill in bombing enemy transport, etc., at low altitudes. He took a conspicuous part in the attack on bridges over a certain river; subjected to very heavy machine-gun fire he descended to 150 ft. to exactly locate their position, and bombed them from a low altitude.

Lt. S. CARLIN, M.C., D.C.M. (R.E.).
A gallant and determined pilot, who sets a fine example to his squadron. Though handicapped by the loss of a leg, he is bold and skilful in attack, and has destroyed four balloons and shot down two enemy machines. (M.C. gazetted Oct. 20th, 1916; D.C.M. gazetted Aug. 5th, 1915.)

Lt. (temp. Capt.) F. M. CARTER.
A fine leader, who has taken part in numerous bombing raids, many at very low altitudes. He has done valuable service in reconnaissance duty, his reports being invariably accurate and informing. During the recent operations his squadron has suffered severe casualties, and it is due in no small measure to his personal influence that the fighting spirit of the squadron has been maintained at a high level.

Lt. (temp. Capt.) B. E. CATCHPOLE, M.C.
This officer has at all times set a magnificent example of courage and determination in his flight, and it is very largely owing to his energy and judgment that the marked success which has been obtained by his flight, both in observation for our long-range artillery and in photography of their objectives, is due. (M.C. gazetted Sept. 16th, 1918.)

Lt. A. W. CHADWICK.
This officer has completed 166 hours' war flying. Bold in attack, he possesses both initiative and skill. During the recent operations he has rendered very valuable services, silencing a hostile battery, putting out of action a machine-gun, and breaking up an enemy column in retreat. He has also carried out important reconnaissance duty.

Lt. (temp. Capt.) J. COTTLE.
On Aug. 20th this officer engaged a two-seater, which crashed. On the evening of the same date he shot down another two-seater, which fell within our lines. In all he has destroyed or shot down seven enemy machines. He is a determined leader of patrols, and conspicuous for devotion to duty.

Lt. C. S. L. COULSON.
During the late operations this officer has set a brilliant example of courage and skill, notably on one occasion when, observing a party of the enemy in a trench firing at some of our infantry, he repeatedly dived on the trench, firing at the occupants and distracting their attention from our troops. Eventually he was wounded twice in the leg, but succeeded in reaching his aerodrome.

Sec. Lt. (temp. Lt.) W. B. CRAIG (Sea Patrol, Can. F. Art.).
Whilst acting temporarily as flight leader on one day last month he personally destroyed three enemy machines, and the remainder of his flight accounted for three more. Lt. Craig has been engaged in numerous air battles, and always displays fine spirit, ability, and determination in carrying out his duties. He has personally brought down two enemy machines completely out of control, in addition to those referred to above.

Lt. J. E. CRODEN.
During recent operations this officer has displayed conspicuous courage and devotion to duty in attacking from low altitudes enemy troops and transport with machine-gun fire. He has also rendered valuable service on reconnaissance duty.

Sec. Lt. (temp. Lt.) A. R. CROSTHWAITE.
When on a photographic reconnaissance this officer made a very gallant flight. His machine was attacked by six scouts at close range; engaging one at 50 yards' range, he drove it down out of control. He continued to engage the remaining five scouts until his ammunition was nearly expended, when, five of our scouts coming to his assistance, the enemy was driven off. Lt. Crosthwaite has taken part in 55 bombing raids, 32 photographic reconnaissances, and several combats.

Capt. S. DALRYMPLE.
A gallant and skilful leader who has been instrumental in destroying at least five enemy machines. He has carried out many reconnaissances under very difficult circumstances and brought back most valuable information, including photographs of the enemy's position.

Lt. G. W. F. DARVILL.
When returning from a bombing raid this officer, singlehanded, engaged three Fokkers. Despite the fact that his observer's gun jambed, he drove down one out of control, which was seen to crash. He has carried out 44 successful bombing raids, several of which he has led. In addition, he has rendered valuable service on photographic and other reconnaissance duty. A keen and zealous officer, who sets a fine example of devotion to duty to younger pilots.

Lt. D. A. DAVIES (Wilts R.).
This officer set a fine example of gallantry and courage, notably on two occasions. On June 12th he, singlehanded, engaged four enemy scouts, one of which he shot down in flames and a second out of control; the latter was seen to catch fire on reaching the ground. Some weeks later he led his patrol of four scouts against a formation of 11 hostile machines; two of these were shot down in flames, the wings fell off another, and the remainder dispersed.

Sec. Lt. J. G. DENNIS.
On a recent bombing raid this officer was engaged in a formation which was attacked by 29 of the enemy, and in the ensuing fight he was severely wounded. He at once signalled to his observer to take charge of the machine, but the observer had also been wounded and was unable to comply. Lt. Dennis decided that his duty demanded that he should remain with his formation to the end of the battle, and this he did, notwithstanding the loss of blood from his wounds. He succeeded in bringing his machine back to our lines—a distance of over 40 miles—a feat which surprised his commanding officer.

Lt. (temp. Capt.) H. R. DE WILDE.
This officer has proved himself a bold and skilful aviator. On a recent date, having bombed an enemy dump, he dived on troops who were detraining near; the enemy scattered and fled, so vigorous was his attack. Later on the same day he engaged several large parties of infantry in the streets of a town, inflicting casualties and causing confusion.

Sec. Lt. B. DONALD.
A most reliable and gallant observer, who has done remarkably well when flying with Lt. Buick. Relying in full confidence on Lt. Donald's ability and courage, Lt. Buick carried out shoots, and took photographs, unescorted, at considerable distances over the enemy's lines.

Lt. (temp. Capt.) M. L. DOYLE (Quebec R.).
This officer has completed 40 bomb raids, 20 low bomb and ground raids, and 6 photographic reconnaissances, making 66 distinct flights, 29 of which he has led with conspicuous success. His gallantry, judgment, and foresight are marked, and furnish a fine example to all.

Sec. Lt. S. L. DUNLOP.
On a bomb raid the machine in which this officer was observer was attacked by a number of aeroplanes; one of these he shot down in flames. On the return journey he was again attacked, and he succeeded in shooting down a second machine in flames. In this latter attack his pilot was severely wounded, and fainted. Sec. Lt. Dunlop immediately took the controls. Leaning over the fuselage to support his pilot, steering the machine and at intervals firing on the enemy aircraft as they closed on him, he made for our lines, and with the help of the pilot, who had recovered consciousness, landed in safety. A very fine performance, reflecting the greatest credit on this officer's courage and skill, more especially as he had only joined the squadron three weeks previously.

Lt. (temp. Capt.) W. B. ELLIOTT.
This officer has taken part in 100 bombing raids, in the majority of which he has been leader, a position for which he has the essential qualities in a marked degree—viz., courage, resolution, and resource. While leading one bombing raid his formation was attacked by 30 hostile machines; 10 of these were destroyed, the objective was successfully bombed, and the formation returned without the loss of a machine. This brilliant success was mainly due to Capt. Elliott's skilful leadership.

Lt. (temp. Capt.) CARL FREDERICK FALKENBERG (Quebec R.)
A bold and skilful aviator, who has destroyed four enemy machines and driven down four out of control. In addition, he has performed many gallant deeds in attacking troops, transport, etc., on the ground.

Lt. CONWAY MACALISTER GRAY FARRELL.
This officer rendered conspicuous service on the 8th August in attacking enemy troops and transport with machine-gun fire and bombs. Having silenced a machine gun, he attacked some transport, driving off the personnel. Later on he attacked a dump and carried out a reconnaissance in an area where our cavalry were reported to be held up, rendering a most valuable report of the situation. Eventually, in a combat with about forty scouts, he was shot down. He has destroyed or taken a leading part in the destruction of seven enemy machines.

Lt. (temp. Capt.) WILLIAM HASTINGS FARROW.
A brilliant fighting pilot, who never hesitates to engage the enemy, regardless of the latter's numerical superiority. His courage and tenacity sets a fine example to others in his formation. He has led numerous offensive patrols, and has personally destroyed five enemy machines and shot down two others out of control.

Lt. GORDEN AIRD FLAVELLE
On the night before one of our attacks this officer was detailed for special and most important duty, which necessitated patrolling our advance lines. He attempted to leave the ground at 10 p.m., but was forced to return owing to low clouds and driving rain. Two hours later he made a second attempt in what appeared almost impossible weather conditions; he, however, persevered. Flying on a compass course, and judging the time necessary for the flight, he reached his objective and patrolled the lines for two hours and fifty minutes, returning to his aerodrome in a state of complete exhaustion after a flight of three and a half hours. The courage, skill, and determination exhibited by this officer cannot be too highly commended.

Lt. (temp. Capt.) ERNEST WILLIAM FLETCHER (Essex R.)
This officer is a very brilliant artillery observer; in this service he displays remarkable skill combined with clear judgment and perseverance. The success that has attended the numerous operations in which he has taken part is largely due to the valuable services rendered by this officer. By his energy and fine example he has brought his flight to a high state of efficiency.

Lt. GEORGE BUCHANAN FOSTER.
This officer has destroyed four enemy machines and driven a fifth down out of control. He is an intrepid fighter, who on one occasion, in company with another pilot, attacked two kite balloons, shooting down one in flames and driving down the second in a deflated condition.

Lt. CHARLES FRANKLIN GALBRAITH.
Throughout the recent operations this officer has carried out work of outstanding merit in attacking enemy troops on the ground and in obtaining information as to the position of our infantry and cavalry and those of the enemy. He has also taken photographs from very low altitudes, and which were urgently required

Lt. (temp. Capt.) WILLIAM CHARLES GARDINER.
During recent operations this officer has rendered most valuable and gallant service in creating smoke screens with bombs and in engaging enemy troops. Dauntless in attack, by his utter disregard of danger he sets an example worthy of emulation by all.

Lt. (temp. Capt.) CECIL VERNON GARDNER.
A bold and skilful leader, who has carried out many offensive patrols, proving himself at all times to be a brilliant fighting pilot. During recent operations he has accounted for eight enemy machines.

Lt. GEORGE BRIAN GATES.
On a recent occasion this officer, single-handed, engaged two enemy two-seaters, bringing down both in flames. He has, in addition, destroyed a third machine and shot down two kite balloons in flames. On whatever duty engaged—bombing, attacking troops on the ground, or fighting in the air—this officer displays consistent courage and skill.

Lt. (temp, Capt. JOHN GORDON GILLANDERS (18th Sqn.).
This officer has carried 29 successful bombing raids, 16 photographic flights and 36 reconnaissances, and his work has been admirable, characterised by marked ability. In the course of these numerous flights he has never hesitated to engage enemy aircraft, thereby on many occasions materially assisting his formation.

Lt. FREDERCK WARRINGTON GILLETT.
When attacking a kite balloon, a two-seater guarding it advanced to engage him; Lt. Gillett shot the machine down, and, turning to the balloon, which was being rapidly hauled down, he dropped two bombs at the winch and fired a drum into the balloon, which deflated but did not catch fire. In addition to this two-seater, this officer has accounted for two other machines and a kite balloon.

Owing to pressure on space, the remainder of this Honours List is unavoidably held over.

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, Oct. 29th.

The following gentleman was introduced into the presence of the King [at an Investiture] when his Majesty invested him with the insignia of a member of the Most Excellent Order of the British Empire :—

Mr. Harry Hawker.

The King and Queen gave a dinner this evening in the State Dining Room in honour of the visit of his Imperial Highness Admiral Prince Yorihito of Hagashi Fushimi.

A special invitation was issued to the Lord Weir (Secretary of State for the Royal Air Force).

BUCKINGHAM PALACE, Oct 31st.

The following officers were introduced into the presence of the King, when His Majesty invested them with the Insignia of the respective divisions of the Order into which they have been admitted :—

A BAR TO THE DISTINGUISHED SERVICE ORDER.—Lt.-Col. Charles Portal, R.E. and R.A.F.

THE DISTINGUISHED SERVICE ORDER.—Brig.-Gen. Norman MacEwen, R.A.F.

The King then conferred decorations as follows :—

THE DISTINGUISHED SERVICE CROSS.—Capt. Ernest Deans, R.A.F., Capt. Hector Furniss, R.A.F.

THE MILITARY CROSS AND TWO BARS.—Capt. Andrew Cowper, R.A.F.

THE MILITARY CROSS.—Capt. Edward Bryson, R.A.F.; Capt. Arthur Penny, Gen. List, attd. R.A.F.; Lt. Harold Hobby, Yorkshire Regt., attd. R.A.F.; Sec. Lt. William Anderson, E. Yorkshire Regt., attd. R.A.F.

THE ALBERT MEDAL.—Capt. Paul Robertson, R.A.F.—A seaplane got out of control and spun to the ground. Capt. Robertson, who at the time was Acting Flight Commander, Royal Naval Air Service, and was acting as Observer, jumped from the machine just before it reached the ground, and landed safely, as the ground was marshy. The Pilot, Flight Lieutenant H. C. Lemon, was imprisoned in the seaplane, which on striking the ground immediately burst into flames, and notwithsanding that the vicinity of the seaplane was quickly a furnace of blazing petrol, and that heavy bombs, a number of rounds of ammunition, and the reserve petrol tanks were all likely to explode, Captain Robertson returned and endeavoured to extricate the Pilot, and only desisted when he had been so severely burned in the face, hands, and leg that his recovery was for some time in doubt.

He displayed the greatest gallantry, self-sacrifice, and disregard of danger in his efforts to extricate the Pilot.

BUCKINGHAM PALACE, Nov. 1st.

Lt. S. S. B. Purves, R.A.F., had the honour of being received by the King this morning.

The following appointments have been made :—

ADMIRALTY APPOINTMENTS.

WOMEN'S ROYAL NAVAL SERVICE.

ASSIST. PRINS.—Miss E. Middleton, to Pulham, R.A.F.; Mrs. M. I. Smythe and Miss P. M. Hogge, both to Headquarters, Devonport 9th Group, R.A.F., for Sec. duties (non-Admin. Immobile).

NOV. 4th.—WOMEN'S ROYAL NAVAL SERVICE.—PRIN.—Miss M. M. MacDougall, to South Shields Seaplane Base (Nov. 4th); Miss J. Harrison, to Chingford; Miss G. Cox, to Milford Air Station, temp. (Nov. 9th).

OFFICIAL COMMUNIQUES.

NAVAL.

ADMIRALTY COMMUNIQUÉ.

OCT. 29th.—Operations of Royal Air Force contingents working with the Navy from Oct. 19th to 26th have been considerably curtailed owing to unfavourable weather.

Five tons of bombs were dropped on the enemy's railway communications in the Belgian area, a train being set on fire and many casualties caused among the troops by low-flying machines. Anti-submarine, coastal reconnaissance, and convoy patrols have been carried out

Enemy aircraft activity has been below normal, one machine being destroyed in combat

All our machines have returned safely.

MILITARY.

G.H.Q. COMMUNIQUÉS.

OCT. 29th, 6.35 p.m.—Improved weather conditions on Oct. 28th resulted in increased aerial activity on both sides, and a large number of fights took place. Thirty-two enemy machines were destroyed, 10 were driven down out of control, and two hostile balloons were shot down in flames.

Eight of our machines are missing.

Important railway junctions on the enemy's lines of communication were successfully attacked by our bombing squadrons, which dropped 17 tons of bombs during the day, but at night low clouds again hampered operations, and only one raid was accomplished.

The work of our reconnaissance and artillery machines was continued.

OCT. 30th, 7.28 p.m.—On Oct. 29th fine weather enabled flying operations to be continued actively on the whole front. Many targets were indicated to our artillery, and the machines observing the effect of our fire reported that much damage was caused to enemy gun positions. Reconnaissance and photographic work was continued, and our bombing machines dropped over nine and a quarter tons of bombs on centres of enemy activity.

Hostile aircraft showed considerable activity during the day. In air fighting 17 German machines were shot down and seven were driven down out of control. In addition, one enemy machine was shot down by our anti-aircraft guns.

Eight of our machines are missing.

During the night our squadrons dropped 12½ tons of bombs on important railway stations and junctions on the enemy's lines of communication, obtaining many direct hits.

One of our machines has not returned.

OCT. 31st, 8.12 p.m.—On Oct. 30th our squadrons displayed intense activity along the whole front. Over 3,000 photographs were taken, and nearly 22 tons of bombs were dropped

A very successful attack was carried out on a German aerodrome, in which two hangars containing machines were completely demolished by bombs dropped from a very low altitude, and two other machines standing on the aerodrome were also destroyed. Many casualties were caused to *personnel* on the aerodrome by our machine-gun fire, and horse transport in the vicinity stampeded.

The outstanding feature of the day was the heavy and continuous air fighting, which resulted greatly to our advantage. No fewer than 64 German machines were destroyed, 15 more were driven down out of control, and one balloon was shot down in flames.

After dark, our night-flying squadrons continued operations, dropping five and a quarter tons of bombs on important railway junctions. One German night-flying machine which was encountered was shot down in flames.

Including the two machines destroyed on the ground, the total of 67 German aeroplanes known to have been accounted for, without considering those driven down out of control, establishes a record for one day's fighting.

Moreover, this was accomplished with the proportionately small loss of 18 of our machines missing, one of which failed to return from a night bombing raid.

NOV. 1st, 8.5 p.m.—On Oct. 31st low clouds and mist somewhat restricted operations, but reconnaissance and photographic work was completed, and accurate observation of artillery fire resulted in considerable damage being caused to enemy battery positions. Our bombing machines continued to bombard enemy railways and other targets, dropping over 6½ tons of bombs.

After the severe fighting of the previous day the enemy's machines showed very little activity. In air fighting two hostile machines were destroyed and one was driven down out of control.

Two of our machines are missing.

Owing to weather conditions no night operations were possible.

NOV. 2nd, 7.30 p.m.—On Nov. 1st our squadrons continued their work in fair but misty weather. A good deal of reconnaissance and photographic work was accomplished.

Many targets were reported to our artillery, and our machines observing the result of our fire reported considerable damage caused to the enemy's gun positions. Excellent targets were presented to our low-flying aeroplanes operating over the battle front. Full advantage was taken of these with bombs and machine-gun fire, great confusion and many casualties being caused among the enemy. Nearly 15½ tons of bombs were dropped, many direct hits being observed on railway junctions and sidings.

Hostile aircraft were fairly active during the day. In air fighting 13 German machines were shot down and seven driven down out of control. Two of the enemy's balloons were shot down in flames.

Ten of our machines are missing.

At night, in spite of very unfavourable conditions, our machines succeeded in dropping 2½ tons of bombs on enemy railways and billets.

All these machines returned.

9.50 p.m.—During the three days of fighting (Oct. 31st to Nov. 2nd) the Allied Air Forces have vied with one another in courage, and have maintained complete mastery of the air, bombing and machine-gunning troops and transport as well as hostile communications behind the front. They also attacked such patrols as endeavoured to bar their way, bringing down a number of enemy machines. The results obtained by the British aviators in particular were altogether remarkable.

NOV. 3rd, 7.45 p.m.—On Nov. 2nd low clouds and rain considerably interfered with flying operations, but some valuable reconnaissance and photographic work was accomplished

Our machines, working in conjunction with our artillery, reported many targets to them, of which they took full advantage, and under the accurate observation thus afforded caused considerable damage to hostile gun positions, active batteries, transport, and troops. The confusion caused was materially added to by our aeroplanes with bombs and machine-gun fire. Five and three-quarter tons of bombs were dropped during the day, chiefly in the enemy's forward areas.

There were very little activity on the part of the enemy's aircraft. One German machine was destroyed in air fighting, and one was shot down by our anti-aircraft guns

Three of our machines are missing.

No operations could be carried out at night on account of weather conditions.

NOV. 4th, 7.50 p.m.—On Nov. 3rd, low clouds and rain greatly restricted flying operations, but some reconnaissance and artillery observation work was successful, and nearly one and three-quarters tons of light bombs were dropped on enemy camps, transport, and other suitable targets.

Hostile aircraft showed only slight activity during the day. In air fighting, six German machines were shot down and two were driven down out of control.

Three of our machines are missing.

At night, in spite of very unfavourable weather conditions, some of our machines succeeded in attacking important railway junctions on the enemy's lines of communications, dropping nearly six and a half tons of bombs.

One of these machines failed to return.

WAR OFFICE COMMUNIQUÉ.

OCT. 29th.—The G.O.C. in Italy reports :—

In air fighting yesterday four enemy aeroplanes and four observation balloons were destroyed

One of our machines is missing.

OCT. 30th.—The G.O.C. in Italy reports :—

The 10th Army has reached the approximate line Roncadella-Ormelle-Fontanella and line of River Monticano to Ramera. Our aeroplanes were engaged all the afternoon against hostile columns in dense masses retreating down the Conegliano-Sacile and Conegliano-Vittorio Roads. One and a quarter tons of bombs and 10,000 rounds of ammunition were expended with visibly good results One hostile balloon was destroyed.

Three of our machines are missing.

OCT. 31st.—The G.O.C. in Italy reports :—

The Royal Air Force has again to-day done excellent work Over two tons of bombs have been dropped and 20,000 rounds of ammunition have been fired with good results The Sacile-Pordenone road is littered with killed, wounded and *débris*, the result of their attacks.

Eight enemy aeroplanes which were bombed yesterday were found to-day destroyed on Godega aerodrome.

Two of our machines are missing.

NOV. 1st.—The G.O.C. in Italy reports :—

Thick fog has interfered with work in the air, and no reconnaissances have been possible.

NOV. 4th.—The G.O.C in Italy reports :—

The Tenth Army has continued its advance to-day. The Royal Air Force has continued its operations against the retreating columns, but these are not so congested as they have been up to to-day. One enemy kite balloon destroyed.

Four of our machines are missing.

AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

The following dispatches have been received from the Headquarters of the R.A.F., Independent Force, in France :—

OCT. 29th.—On Oct. 28th our machines carried out heavy attacks on

'Human Documents'

No. 2.

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Enclosed please find the Goggles which I bought last Friday. You will see I am greatly indebted to Triplex Safety Glass, as it saved my eye from being badly cut.

Will you please repair the Goggles and return as soon as possible.

Please send bill when you send Goggles.

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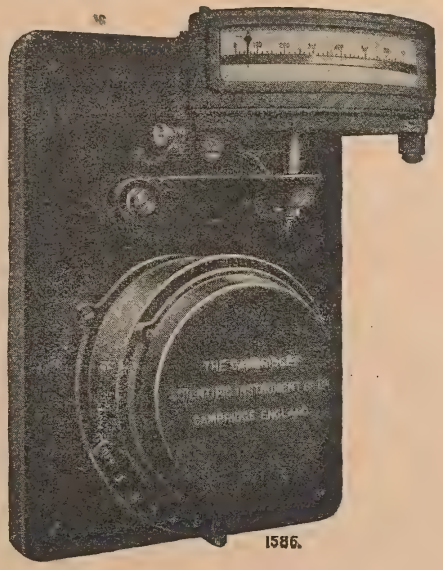
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Morhange aerodrome. Eighteen hits were observed on the aerodrome, and a fire was caused. In the course of fighting one enemy aeroplane was shot down in flames and fell upon our side of the lines. Bombs were also dropped on Frescaty aerodrome.

On the night 28th-29th we attacked the Badische aniline and soda factory at Mannheim, and the railways at Trèves and Saarbrücken, where heavy bombs were dropped.

The important railway junctions at Longuyon, Ecouviez and Thionville were also attacked, with excellent results. Over 10 tons of bombs were dropped during the day and night.

None of our machines is missing.

To-day the railway junction at Longuyon and the aerodrome at Jametz (west by south of Longuyon) were attacked with very good results.

Three of our machines are not yet located.

Oct. 30th.—Two of the machines reported unlocated on the day of Oct. 29th have now been located. Also, in the course of fighting on that day two enemy aeroplanes were destroyed and one was driven down out of control.

On the nigth of the 29th-30th two important chemical works and one aeroplane works at Mannheim were attacked with good results. Many direct hits were obtained, and a large number of bombs were dropped.

The blast furnaces at Burbach, the railways at Thionville and Offenburg, and a hostile aerodrome at Hagenau were also attacked. Direct hits were obtained on all these targets.

One of our machines is at present unlocated.

Oct. 31st.—On the night of the 29th-30th inst., in addition to targets already reported as attacked, the chemical factories at Worms were bombed with good effect.

On the afternoon of the 30th our machines attacked a hostile aerodrome. Results could not be observed.

All our machines returned.

On the night of the 30th-31st our machines attacked two hostile aerodromes, obtaining four direct hits on hangars, and starting a fire. The railways at Baden, the chemical factories at Karlsruhe, and the blast factories at Burbach were also successfully attacked.

Mist and fog which have been prevalent throughout the past week, and have made long-distance work exceptionally difficult, again prevented accurate observation of results.

All our machines returned.

Nov. 1st.—On the 31st ult. weather conditions were again bad for long-distance work, but, in spite of this, our machines, flying through low clouds and rain-storms, reached Bonn, and attacked the railway station in the centre of the town. Other machines attacked the railway at Trèves, and Frescaty Aerodrome. Two of our squadrons attacked Bühl Aerodrome, obtaining direct hits on and near hangars.

All our machines returned safely.

Nov. 3rd.—Our machines to-day carried out heavy attacks on the railways in and around Saarburg. Several bursts were seen on railway lines, but owing to unfavourable weather results were most difficult to observe. One squadron attacked Bühl with good results, hits being obtained on and near the hangars.

All our machines returned.

THE CASUALTY LIST.

MILITARY.

Reported Oct. 30th

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Kneller, Sec. Lt. F. K., R.F.C.
Russell, Sec. Lt. G., R.F.C.

AUSTRALIAN FORCE.—WOUNDED.—Boyle, Sec. Lt. J. C., F.C.

Reported Nov. 1st.

CANADIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Brisbin, Lt. H. V., Cent. Ont. Regt., attd. R.A.F.

Reported Nov. 2nd.

AUSTRALIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—McCleery, Lt. E. P. E., F.C.

Reported Nov. 4th.

The following officer, who has been a prisoner in Germany, has now arrived in England:—

CANADIAN FORCE.—Morse, Capt. T. W., Cent. Ont. R., attd. R.F.C.

Reported Nov. 5th.

CANADIAN FORCE.—DIED.—Jamieson, Lt. W. H., Cent. Ont. R., attd. R.A.F.
Lloyd, Lt. L. B. E., Can. Cav., attd. R.A.F.

AIR FORCE.

Reported Oct. 31st.

KILLED.—Buckeridge, Lt. W. H
Clarke, Sec. Lt. H. P.
Day, Lt. G. S.
Morris, Lt. W. A.
Occomore, Sec. Lt. F. S., D.F.C.

WOUNDED.—Allanson, Sec. Lt. E. L., Biltcliffe, Sec. Lt. H. G., Heyes, Sec. Lt. E. C., Kilpatrick, Sec. Lt. A. W., Stead, Sec Lt. T., Wilkinson, Sec. Lt. J. R.

MISSING.—Carr, Sec. Lt. G. T., Farquharson, Lt. R. J., Mackay, Lt. D. D. A., Phillips, Sec. Lt. P. L., Wilson, Lt. C. M.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Kane, Lt. M. H. K., M.C.
Lawe, Lt. A. G.
Thomson, Sec. Lt. G. F.
Travers, Sec. Lt. G.
Yates, Sec. Lt. R. A.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Boulton, Sec. Lt. F. E.
Harrington, Lt. H. B. D.
Harris, Sec. Lt. N. B.
Lamont, Sec. Lt. W.
Robins, Lt. S. M.
Summers, Capt. J. K., M.C.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONERS OF WAR, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Hunter, Lt. H. C.
Jones, Sec. Lt. A. V.

INTERNED.—Enright, Sec. Lt. T. N.
Munro, Lt. J. G.
Pendleton, Sec. Lt. W. (Junr.)
Peters, Sec. Lt. J. F. J.

CADETS KILLED.—Bousfield, H. W
Jenkins, J. A.
MccLaurin, J. H.
Strange, H. S.
Wright, H. C.

Reported Nov. 1st.

KILLED.—Crosby, Sec. Lt. E. E.
Finzi, Lt. E. C.
Heywood, Lt. F. K.
Jones, Sec. Lt. B. R.
Malcolm, Sec. Lt. A. G.

WOUNDED.—Howie, Sec. Lt. K. W. I., MacKay, Lt. G. C., Nelson, Lt. H. E. R., Parks, Sec. Lt. H. C., Thorpe, Sec. Lt. F. C. A., Worthington, Sec. Lt. L. P.

MISSING.—Bingham, Sec. Lt. H. W., De Bussy, Sec. Lt. W., McDonald, Sec. Lt. J. C., McMurtry, Sec. Lt. B., Markquick, Sec. Lt. E. B., Owen, Lt. W. T., Pattullo, Sec. Lt. N. C., Whitlock, Sec. Lt. H. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Seymour, Lt. L.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONERS OF WAR, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Wilson, Lt. H. B. B.
Wood Sec. Lt. J. C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Angus, Sec. Lt. K. R.
Atkins, Sec. Lt. C. A.
Brown, Lt. L. L.
Cox, Sec. Lt. W.
Doncaster, Sec. Lt. A. E.
Manzer, Capt. R., D.F.C.
Risk, Sec. Lt. J. B.
Schooling, Sec. Lt. G. R.
Sutcliffe, Lt. J. E. T.
Tussaud, Lt. H. C.
Wood, Lt. H. H.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Gordon, Sec. Lt. C. A.
Tansley, Sec. Lt. H. E., M.C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONERS OF WAR.—Stringer, Sec. Lt. J. S.
Swayze, Lt. W. K.

INTERNED.—Mars, Lt. W. S.
Power, Sec. Lt. H. E.

Reported Nov. 2nd.

KILLED.—Bennett, Sec. Lt. R. M.
Scribbins, Sec. Lt. W. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Baird, Sec. Lt. R. O.
Hudson, Sec. Lt. H. E.
Penrose, Sec. Lt. K.
Washington, Sec. Lt. W. F.

WOUNDED.—Bentley, Lt. W., Blomfield, Lt. A., Challis, Sec. Lt. H. J., Hall, Sec. Lt. W. T. J., Kitchen, Sec. Lt. G. W.

MISSING.—Allen, Sec. Lt. F. R. L., Scott, Lt. S. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONERS OF WAR.—Cockin, Sec. Lt. J. M.
Hall, Sec. Lt. W. E.
Harley, Lt. V.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Andrews, Lt. J. S.
Beesley, Sec. Lt. R.
Gower, Lt. J. L.
Herriot, Sec. Lt. W. M.
Holland, Lt. E. V.
Thatcher, Sec. Lt. A. R.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Button, Lt. L. H.

Reported Nov. 4th.

KILLED.—Jacks, Sec. Lt. R. L.
Holland, Capt. A.
Drummond, Lt. J. R.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Ostler, Lt. A., M.C.
Elder, Sec. Lt. J. J.

PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.—Jackson, Sec. Lt. W. E.

DROWNED.—Jones, P.F.O. R.

WOUNDED.—Davies, Sec. Lt. J. W., Donaldson, Capt. E. G. E., Draper, Maj. C., D.F.C., Oliver, Lt. W. S. V., Orr, Lt. S. W., Partridge, Sec. Lt. W., Smith, Lt. H. C., Teasdale, Lt. J. A.

PREVIOUSLY REPORTED MISSING, NOW REPORTED BELIEVED PRISONERS OF WAR.—Martin, Sec. Lt. D. A.
McPhee, Lt. R.
Rockford, Sec. Lt. S. W.
Scharff, Sec. Lt. R. L.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Cole, Lt. H. A.
David, Sec. Lt. C. K.
Gage, Sec Lt. C. R.
Stratheam, Lt. W. M
Sutherland, Lt. J. L. C., M.C.
Wells, Capt. G. A.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Mercer-Smith, Sec. Lt. V.

Reported Nov. 5th.

KILLED.—Jacques, Sec. Lt. T. H
Pollins, Sec. Lt. J.
Smith, Sec. Lt. A. E.
White, Lt. A. G.
Wilson, Sec. Lt. J. S.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Walker, Sec. Lt. H.

DIED OF WOUNDS.—Herbert, Sec. Lt. R. S.

WOUNDED.—Bennett, Sec. Lt. A. B.; Findlay, Capt. J. P.; Fleming, Sec. Lt. W. G.; Garland, Sec. Lt. A. H.; Glover, Sec. Lt. L. E.; Hart, Sec. Lt. J.; Johnstone, Capt. R., M.C.; Jones, Lt. R. N. K.; MacDonald, Lt. E. N.; Mitchell, Sec. Lt. A. McG.; Moore, Lt. J. G.; Robertson, Sec. Lt. A. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONERS OF WAR.—Barritt, Lt. G. L.
Rose, Sec. Lt. D.

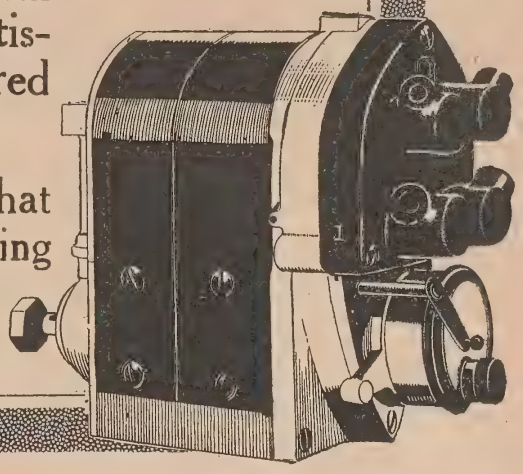
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Askin, Lt. S. C. J.
Boyle, Sec. Lt. J. C.
Boys, Sec. Lt. R. H. G.
Campbell, Sec. Lt. J.
Challis, Sec. Lt. M. E.
Coghill, Sec. Lt. W. H.
Cowgill, Sec. Lt. W. A. F.
Dugdale, Sec. Lt. J. G.
Hall, Sec. Lt. W. A.
Hughes, Sec. Lt. R. D.
Kilbourne, Lt. W. H.
Killick, Sec. Lt. C. H. P.

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Peeling, Sec. Lt. H. V.
Pope, Lt. R. A. B., M.C.
Robinson, Sec. Lt. F. B.
Sinclair, Sec. Lt. D. B.
Shipman, Lt. T. T.

Reported Nov. 6th.

KILLED.—Bark, Lt. N.
Billington, Lt. F. N.
Densham, Sec. Lt. W. J.
Harrison, Sec. Lt. E. A.
Pepper, Lt. B.
Pritchard, Sec. Lt. J. L.
WOUNDED.—Alcock, Sec. Lt. R.; Blake, Lt. G. P.; Dines, Capt. R. J.; Drake, Sec. Lt. T. N.; Tait, Lt. H. W.; Walker, Capt. J. McD.; Whitwell, Sec. Lt. E. J.; Winham, Sec. Lt. A. H.
MISSING.—Baker, Sec. Lt. T. M.; Cave, Sec. Lt. C. F.; Fountain, Sec. Lt. C. C.; Lewis, Sec. Lt. J. A.; McNish, Sec. Lt. H.; Winkler, Lt. M. H.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Anderson, Sec. Lt. D. S.
Burton, Lt. D. F.
Glazebrook, Lt. R. F.
Hollingsworth, Lt. R. L.
Lovell, Sec. Lt. C. E. A.
Thornley, Sec. Lt. S. C.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Foster-Sutton, Lt. S. W. P.
PRISONER OF WAR.—Tapping, Sec. Lt. A.

PERSONAL NOTICES.

NAVAL.

DEATH.

COLEMAN.—Charles James Bruce Coleman, who died on Oct. 27th of malaria fever, was the son of Mr. and Mrs. W. C. Coleman, of 58, Elers Road, West Ealing. He was 19 years of age, and had served 21 months in the W.T. Section of the R.N.A.S. and one year in Italy.

BIRTH.

BROCK.—On Nov. 3rd, the wife of Wing-Comdr. F. A. Brock, R.N., O.B.E. (reported "missing, believed killed," at the raid on Zeebrugge)—of a daughter.

MILITARY.

DEATHS.

GILL.—Capt. Kenneth Carlyle Gill, M.C., R.A.F., who died on Oct. 23rd as a result of a flying accident on Oct. 22nd, was formerly of St. John's College, Leatherhead St. Catharine's, Cambridge, and Cambs T.F., and was the son-in-law of Mr. W. H. Cullen, London and Leatherhead, and the grandson of the late Rev. Geo. Gill, Burnley and L.M.S., and sixth son of Rev. and Mrs. Arthur Tidman Gill, The Vicarage, West Wittering, near Chichester. He was 25 years of age.

HENDERSON.—Lt. E. Brian Henderson, Western Ontario Regt., attd. R.A.F., who died on Nov. 3rd at a nursing home in London, of septic pneumonia following influenza, was the eldest and only surviving son of E. G. Herderson, Windsor, Ontario, and husband of Marguerite Henderson

MATHER.—Lt. Alan William Mather, Black Watch, attd. R.A.F., who died on Oct. 29th as the result of a flying accident, was the third son of Mr. and Mrs. A. H. Mather, 30a, Edenhurst Avenue, S.W.6. He was 24 years of age.

QUIGLEY.—Capt. Francis Granger Quigley, D.S.O., M.C., R.A.F., who died at Liverpool, Sunday, Oct. 20th, was the youngest son of the late R. J. Quigley, of Toronto, Canada. In the autumn of 1914 he was a science student at Queen's University, where during the two previous years he had distinguished himself in Rugby football and with the hockey team. At that time he joined the Canadian O.T.C. at Ottawa, and later joined a company of the Canadian Engineers. It was with this unit that he went to France the following September (1915). After 16 months' service in the field, which included several rather severe engagements in the Ypres salient, at St. Eloi, and on the Somme, he transferred to the R.F.C. Returning to France as a pilot, he won his promotion to flight-commander, and was awarded the D.S.O. and the M.C. and bar. He had carried out many low-flying raids on the enemy's trenches, aerodromes, and back areas, and up to last March had been credited officially with 25 aerial victories.

ROBERTS.—Lt. John Herbert Roberts, R.F.A. and R.A.F., was killed in action on Sept. 24th after nearly four years' active service. He was the only son of the late Rev. Herbert Roberts, vicar of East Lulworth.

SMEE.—Lt. Arthur Joseph Smee, Wiltshire Regt. and R.A.F., who was killed on Oct. 28th as the result of a flying accident in Sussex, was the only son of Mr. and Mrs. J. Smee, of South Norwood. He was 23 years of age.

SPONG.—Lt. R. W. Spong, R.A.F.M.S., late M.G. Section and Yeomanry, died on Oct. 30th at the Military Hospital, Shorncliffe.

TROTTER.—Lt. Claude Handley Trotter, Alberta Dragoons, attd. R.A.F., who was accidentally killed while night-flying in Essex on Oct. 13th, was the youngest son of the Rev. J. Crawford Trotter and Mrs. Trotter, of Ardrahan Rectory, Co. Galway. He was born in 1895 and educated at Galway Grammar School and the Royal School, Armagh. He enlisted at the outbreak of war in the Alberta Dragoons, Canada, and very soon won his commission. He was twice wounded, once with the Canadian Force while rallying his men in a bombing raid on the German trenches, and again as an observer in the R.F.C., when his machine crashed and his pilot was killed.

ENGAGEMENTS.

BUSH—MARSTON.—A marriage has been arranged, and will take place on Nov. 27th, between Capt. Reynell O. C. Bush, R. Dublin Fus., attd. R.A.F., son of the Rev. H. Cromwell Bush, vicar of Seend, Wilts, and Mary Eleanor, only daughter of Mr. F. Marston, of Rock Ferry, Cheshire.

FOOT—BOXILL.—The marriage of Capt. C. J. Foot, R.F.A., attd. R.A.F., third son of Mr. and Mrs. W. H. Foot, of 36, Carlton Road, Putney, to Margaret Cecil Matheson Boxill, youngest daughter of Dr. and Mrs. Boxill, of Buttalls, Barbadoes, will take place on Nov. 16th at St. James's Church, Piccadilly, at 11.45. All friends are invited to the church.

JENKINS—JACKSON.—An engagement is announced between Lt.-Col. Leoline Jenkins, D.S.O., M.C., R.A.F., only son of Mrs. Leo. Jenkins, and nephew of Col. A. H. Morris C.M.G., D.S.O., and Jessie Mary Goddard, elder daughter of Mr. and Mrs. N. Goddard Jackson, of Duddington, Stamford.

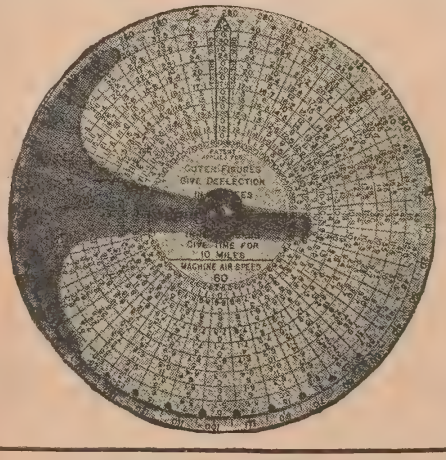
MARRIAGE.

CROWE-TOMS.—On Oct. 29th, at the Church of the Assumption, Warwick Street, W., by the Rev. Father Wilkinson, O.M.I., Capt. Edgar Llewellyn Crowe, R.A.F., late 3rd Batt. the Buffs, was married to Marjorie, only child of the late Mr. and Mrs. George Chester Toms.

* * *

The Editor of THE AEROPLANE has received news that the grave of Capt. Pixey, R.F.C., who was killed while flying in June, 1917, has been discovered on newly captured territory. Capt. Pixey's body was buried by the enemy, and the following inscription was found over the grave: "English flying officer, Capt. Pixey, killed 4.6.17."

If the relatives of the late Capt. Pixey are ignorant concerning the place of his death and burial, the Editor of THE AEROPLANE will be pleased to put them in touch with the soldier who found the grave.



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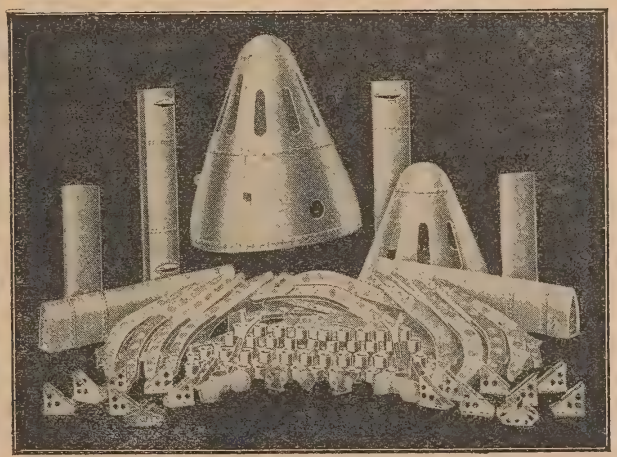
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AIR FORCE.

Deaths.

ARBUTHNOT.—Capt. Lenox Stanley Arbuthnot, R.A.F., who died on Nov. 1st as the result of an aeroplane accident in England, was the only son of Maj. and Mrs. Lenox C Arbuthnot. He was 22 years of age.

ASBURY.—Capt. Edward Dannet Asbury, R.A.F., who was killed in action on Sept. 29th, was the only son of Capt. and Mrs. Dannet Asbury. He was 19 years of age.

BARNES.—Capt. Goodwin Barnes, R.A.F., who died on Oct. 29th in the Isle of Wight from pneumonia following influenza, was the only son of the late Mr. G. Howard Barnes and Mrs. Barnes, of "Roselawn," Chislehurst, Kent, and grandson of the late W. Goodwin Barnes, of "Foxley," Bishops Stortford, Herts. He was 21 years of age.

HOOK.—Lt. Geoffrey Hook, R.A.F., who died suddenly on Oct. 4th at Madronas, Cobblehill, Vancouver Island, B.C., while at home on sick leave, was the youngest and last surviving son of Allan J. Hook. He was 24 years of age.

MATHEWS.—Capt. John Waldron Mathews, R.A.F., of San Julian, Patagonia, who was previously reported missing, is now known to have been killed in action on July 31st. He was the elder son of Mr. E. J. Mathews and Mrs. Mathews, of Brockley Combe, Weybridge. He was 28 years of age.

PONTING.—Sec. Lt. William Ponting, R.A.F., who died at Aldershot on Oct. 25th, was the second son of Thomas and Alice Ponting, Taynton, Gloucestershire.

REYNOLDS.—Lt. Chas. E Reynolds, R A.F., who died of wounds on Oct. 23rd, was the eldest surviving son of the late James Reynolds and of Mrs. Reynolds, of North View, Sevenoaks, formerly of Alleyn Park, Dulwich. He was 22 years of age.

SHERWOOD.—Lt. Francis Colin Sherwood, R.A.F., who died on Oct. 30th, at Brooklands Hospital, Hull, was the eldest son of Mr. and Mrs. Frank Sherwood, 7, Pollards Hill West, Norbury, S.W. He was 19 years of age.

WEAVER-ADAMS.—Sec. Lt. Philip Clive Weaver-Adams, R.A.F., who died on Oct. 28th as the result of a flying accident, was the younger son of E. Weaver-Adams, F.R.C.S., of Church Street, Slough.

Engagement.

TRURAN—SCAIFE.—The engagement is announced of Maj. C. J. Truran, R.A.F., only son of Mr. and Mrs. J. Jameson Truran, of Harrow-on-the-Hill, and Betty, eldest daughter of the late T. J. Scaife and of Mrs. Scaife, of Gateshead, Newcastle-on-Tyne.

Marriages.

DAVIS—CRAIG.—On Sunday, Oct. 6th, very quietly at Winterbourne Stoke, Wilts, Lt. J. G. Davis, R.A.F., of Durban, Natal, S. Africa, was married to Ivy Craig, daughter of Mr. Frederick Craig, of St. Colomb Minor, North Cornwall.

WATSON—WATSON.—On Oct. 29th, at St. Bride's Church, Fleet Street, Temp. Capt. William Trevor Watson, R.A.F., of Gray's Inn and S.E. Circuit, Barrister-at-Law, was married to Clare, elder daughter of John Watson, Esq., "Wilmslow," Eltham Park, S.E., by the Rev. W. Watson, M.A., vicar of Holcombe Burnell, Exeter, father of the bridegroom, and the Rev. A. Taylor, M.A., vicar of the parish.

WEEKS—GARTHWAITE.—On Oct. 28th, at St. Luke's Church, Thornaby-on-Tees, Lt. Reginald V. Weeks, R.A.F., elder son of Mr. E. V. and Mrs. Weeks, of Fairlight, St. Peter's Road, Croydon, was married to Norah, fourth daughter of Mr. J. R. and Mrs. Garthwaite, Glenholme Handale, Thornaby-on-Tees, by the Rev. R. J. Featherstone, Vicar.

Births.

BENEST.—On Oct. 24th, to Kathleen, wife of Capt. Edward E. Benest, M.A., F.R.G.S., A.I.N.A., R.A.F., 3, Turle Mansions, Tollington Park, N.4—a son.

BUCHANAN.—On Oct. 29th, at Eastbourne, Zetton (née Chesnay), wife of Capt. E. L. Buchanan, R.A.F.—a son

BUSH.—On Oct. 27th, 1918, at Clifton Park, Clifton, Bristol, the wife of Lt. G. S. Bush, R.A.F.—a son.

DIAMOND.—On Nov. 2nd, at the Nursing Home, Felixstowe, to Capt. and Mrs. George Le Boutillier Diamond, a daughter.

GAUNTLETT.—On Nov. 1st, at 4, St. Mary's Terrace, Penzance, to Dorothy, wife of Lt. A. D. Gauntlett, R.A.F.—a daughter.

HEMMING.—On Nov. 2nd, at Spero, Campbell Road, Salisbury, the wife of Maj. H. Hemming, R.A.F., of a daughter.

HUMPHREYS.—On Oct. 29th, at 146, Colehern Court, London, the wife of Maj. Francis Henry Humphreys, Indian Political Service (on furlough), R.A F.—a daughter.

JOHNSEN.—On Oct. 30th, at Wilhayes, London Lane, Bromley, Kent, to May (née Bowater), wife of Capt. O. C. W. Johnsen, D.F.C., Croix de Guerre, R.A.F.—a daughter.

SOWREY.—On Oct. 30th, at Quarry Down, Hythe, Audrey, the wife of Maj. John Sowrey, Sqdn. Comdr., R.A.F.—of a son.

* * *

TAYLOR.—On Oct 27th, from pneumonia, Florence Eliza, the beloved wife of Cpl. S. Taylor, R.A.F., of "Gleniffer," Finchley and daughter of Mr. and Mrs. Arthur Bennett, of Finchley

* * *

Sec. Lt. K. P. Barford, R.A.F., has been missing since March 27th, 1918, from the Somme front. Any information will be gratefully received by H. W. Barford, Earlsdon, Coventry.

* * *

Capt. J. W. Mathews, R.A.F., has been missing since July 31st. Will friends of prisoners of war in Germany kindly inquire for news, and communicate with E. J. Mathews, Brockley Combe, Weybridge?

* * *

Sec. Lt. B. Rawlings, R.A.F., was reported missing on July 18th. He was flying with Mr. H. F. N. Mollet. Will the friends of prisoners of war in Germany kindly inquire for news of him? Information will be gratefully received by his mother, Mrs. Rawlings, Vashe Farm, Chalfont St. Giles, Bucks.

FOREIGN COMMUNIQUES.

FRANCE.

Oct. 29th.—On Oct. 28th fine weather favoured the flights of our aviators who carried out important work. Nine enemy aeroplanes were shot down or fell out of control in the course of fighting, and a balloon was set on fire by one of our crews.

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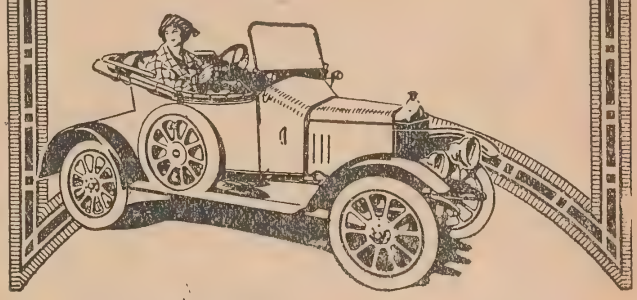
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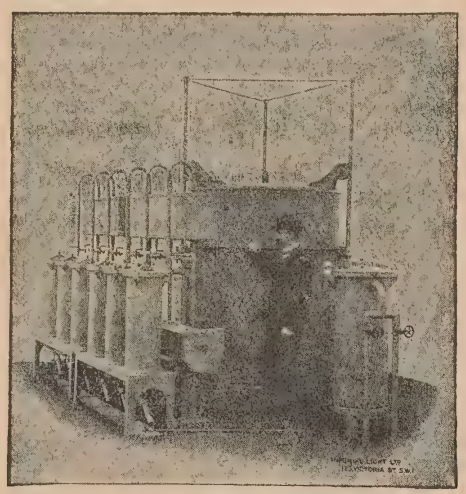
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dropped 16 tons of projectiles on the main railway stations and important assembly points, in particular on the railway stations of Hirson, Vervins, St. Gobert, Montcornet, Marle, and Audun-le-Roman, on the Aviation ground of Mars-le-Tour, and on the vast depots of Prévisy. A number of conflagrations were started, notably at Prévisy, Hirson, and Marle.

Oct. 30th.—The very fine weather of Oct 29th enabled our aviators to give full development to their activity. Observation aeroplanes traversed the enemy's back areas in every direction in their reconnaissances, some of which were pushed as much as 50 miles, and one of which penetrated as far as 75 miles, into the zone occupied by the Germans.

The bombing aeroplanes, continuing their action of the preceding days, dropped over 37 tons of explosives and fired 20,000 rounds on the points of assembly and convoys of the enemy in the region of Remaucourt and Seraincourt (both east of Laon). In the course of these operations and of flights undertaken by fighting planes, 20 enemy machines were shot down or fell out of control, and three captive balloons were set on fire.

During the night our bombers attacked the most important railway stations of the enemy. Nearly 19 tons of projectiles were used with the most successful results on the junctions of Givet, Mézières, Hirson, Vervins, Montcornet, and Launois, and the depots and bivouacs of the region of Prévisy and in that of Montcornet

Adjt. Pezon on Oct. 29th set fire to an enemy balloon. This is the tenth machine accounted for by this pilot—nine balloons and one aeroplane.

Oct. 31st.—On Oct. 30th, the weather was favourable, in spite of somewhat heavy mist, for the operations of our aviators. The scouting and observation operations were as numerous as on the day before, and once more furnished valuable information. Many fires were reported in the Marle-Montcornet region. Seventeen enemy aeroplanes were brought down or were seen to fall in a damaged condition. A balloon was set on fire.

Although the night was very foggy, our bombers, continuing without cessation their work of harassing the enemy's main arteries of communication, dropped 26,850 kilogs. (about 27 tons) of projectiles on the railway stations of Longuyon, Mézières, Hirson, Dommery, Baroncourt, Spincourt, Launois, Chimay, Montcornet, and Vervins, as well as on the cantonments and bivouacs in the region of Chaumont-Porcien and Montcornet.

Nov. 1st.—On Oct. 31st the weather was very misty and cloudy and much hampered aviation operations. Nevertheless, a number of reconnaissances were made, and our chasers brought down five enemy machines.

During the night, although the atmospheric conditions were still more unfavourable than during the day, some of our machines were able to drop a ton and a half of bombs on the railway stations of Longuyon and Dommary-Baroncourt, where great activity was observed.

Nov. 2nd.—On Nov. 1st the very dense fog along the whole front hindered aerial operations. However, our air service, acting in co-operation with our troops, gave them valuable aid in the regions of the front, where they were attacking, as well as in Flanders before the Fourth Army. Observation aeroplanes, incessantly flying over the enemy lines under the protection of our chaser machines, marked the advance of our infantry, regulated the artillery fire on its objectives on the battlefield, and carried out very many reconnaissance flights in the enemy's back areas. Two of these flights, which went as far as 120 kilometres behind the enemy's lines, enabled the province of Namur to be explored.

At the same time great activity by troops and convoys having been noted in the rear of the front of attack of our Fourth Army and the American Army in the region of Chesne Tannay and Noirval, several bombing expeditions were at once carried out there; 148 bombing machines in successive groups protected by fighting aeroplanes—120 in number—took part in these expeditions Our bombers were able to drop from a low height under the best conditions 39,600 kilogrammes of bombs, and to fire tens of thousands of bullets, spreading panic among the hostile troops and dispersing, not without inflicting on them heavy losses, convoys and important concentrations of soldiers. In the course of these operations 17 enemy machines were brought down or put out of action, and one captive balloon was brought down out of control.

During the night, despite a very thick fog, 20,850 kilogrammes were also dropped by our bombers on the enemy's most active stations, especially on those of Vervins, Montcornet, Hirson, Mézières, Poix, Terron, and Wassigny.

Nov. 4th.—Notwithstanding the weather, which has been foggy and cloudy on the whole front, our observing squadrons have carried out several reconnaissances, have kept the Command informed of the movements of the enemy, and reported fires, which were especially numerous in the regions of Remoiville, south of Montmedy, Vendresse, Omont, Alland'Hui, and Montcornet. Our day bombing squadrons dropped 65 tons of projectiles on the northern outlets of Le Chesne and the passages of the bar and the canal to the north-east of that place. The depôts near the station of Le Chesne and the important hutments to the north-west of Tannay were struck and set on fire.

Attacks with machine-guns dispersed or threw into confusion numerous convoys moving on the roads in this region. Over 30,000 cartridges were thus used.

During the day 11 enemy aeroplanes were shot down or forced to land out of control. During the night of Nov. 3rd-4th, in spite of unfavourable atmospheric conditions, the bombing squadrons attacked the stations of the Launois-Pois-Terron and Mezières railway.

ITALY.

Oct. 29th.—Twenty thousand kilograms (about 20 tons) of explosives dropped with very effective results, several tens of thousands of machine-gun rounds fired on troops on the march, 11 aeroplanes and six captive balloons brought down, supplies daringly carried to our most advanced troops on the left of the Piave—all this shows the magnificent war activity of our own and Allied aircraft during yesterday.

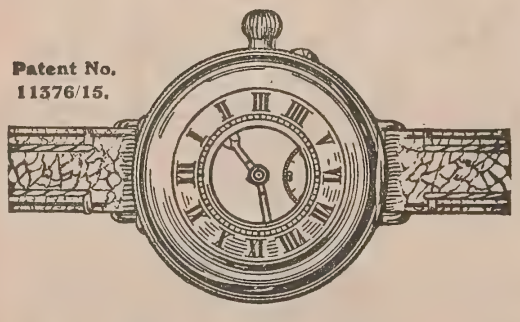
Oct. 29th.—Our own and Allied aeroplanes, seaplanes, and airships of the Royal Army and Navy are competing in bravery and daring, sowing panic and destruction among the enemy's troops and transport. Four hostile machines and a captive balloon were brought down.

Oct. 31st.—To the East of the Piave air activity over the battle continues intense in spite of unfavourable conditions of visibility. Two enemy machines and a captive balloon were brought down.

Nov. 1st.—The battle is continuing and expanding. Flights of aeroplanes precede the troops in the pursuit, bombarding and gunning the hostile columns.

Nov. 2nd.—Our own and Allied aviators completely master the air over the battle (to the east of the Brenta), and have continued without

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pause their daring war actions. An airship bombarded during the night the railway stations of Sugana Valley

Nov. 3rd.—Our own and Allied aviators have brilliantly maintained their exceptional activity.

GERMANY.

Oct. 29th.—During the last two days we have shot down 40 enemy aeroplanes and three captive balloons.

Oct. 30th.—Yesterday we shot down 27 enemy aeroplanes and six captive balloons.

Lt. Doerr obtained his 31st, 32nd, 33rd and 34th aerial victories during the last few days, and Lt. Frommherz his 30th.

Oct. 31st.—Aviation activity was specially lively yesterday. We shot down 58 enemy aeroplanes and two captive balloons.

Lt Doerr obtained his 35th aerial victory, Ober-Lt. Auffahrt his 30th, and Lt. von Hantelmann his 25th

Nov. 3rd.—Lt. Bickler gained his 55th aerial victory.

Nov. 4th.—Twenty-seven persons were killed and 35 badly wounded as a result of the aerial attack on Bonn.

U.S.A.

Oct. 29th.—With more favourable weather conditions, there has been increased air activity on the front of the 1st Army. Throughout the day our pursuit squadrons engaged the enemy in numerous combats, in the course of which 18 enemy aeroplanes were shot down. Five of our machines did not return. Our aviators also carried out important reconnaissances and photographic missions.

Oct. 30th.—Our pursuit squadrons operating on the front of the 1st Army shot down 21 enemy aeroplanes and two observation balloons. Two of our machines are missing.

Oct. 31st.—Yesterday our bombing units attached to the 1st and 2nd Armies carried out a number of successful raids, dropping six tons of explosives on Barricourt, Bayonville, and Longuyon.

Nov. 1st.—Last night French bombing units attached to the 1st Army successfully raided Mézières and Poix-Terron and dropped nearly 12 tons of explosives on the important railways in that region. This morning our aviators dropped three tons of bombs on the roads and dumps in the vicinity of Tailly Barricourt and Villers-Devent-Dun and machine-gunned enemy troops and convoys. In the course of the day seven enemy aeroplanes were shot down. All our machines returned.

Nov. 2nd.—In spite of bad weather conditions, our aviators, flying at extremely low altitudes, carried out important missions over the Meuse Valley and along the whole front of attack.

Nov. 4th.—In the course of the day improving weather conditions permitted our planes to carry out very successfully their missions of reconnaissance and infantry liaison. A raid with a force consisting of 45 day bombardment and 100 pursuit planes was made against Montmédy, and obtained excellent results on the crowded enemy traffic at that place. Over five tons of bombs were dropped. Determined attacks by enemy pursuit gave us added opportunities to destroy his aeroplanes. During the day's fighting 30 enemy airplanes were destroyed or driven down out of control, and three balloons were burned. Seven of our airplanes are missing.

BELGIUM.

Oct. 28th.—One of our aviators yesterday brought down an enemy balloon in flames.

Oct. 29th.—An enemy aeroplane was shot down by our anti-aircraft fire.

Nov. 1st.—One of our aviators brought down an enemy balloon in flames near Caprycke.

Nov. 3rd.—A German aeroplane was brought down on Nov. 1st by the fire of our anti-aircraft batteries.



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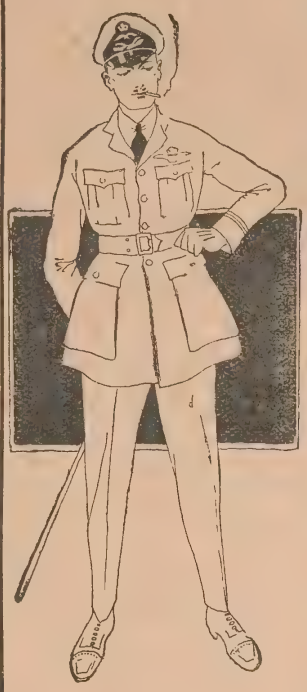
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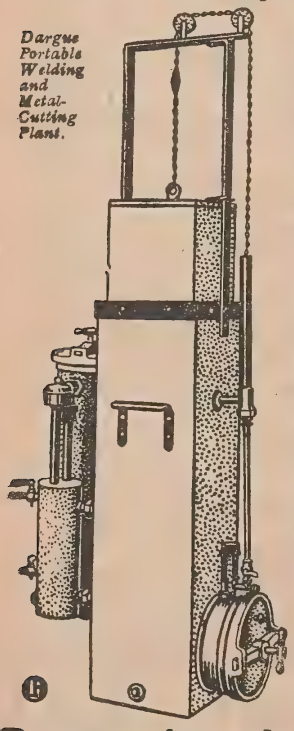
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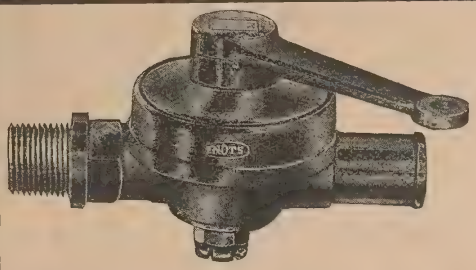
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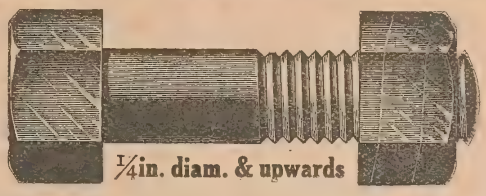
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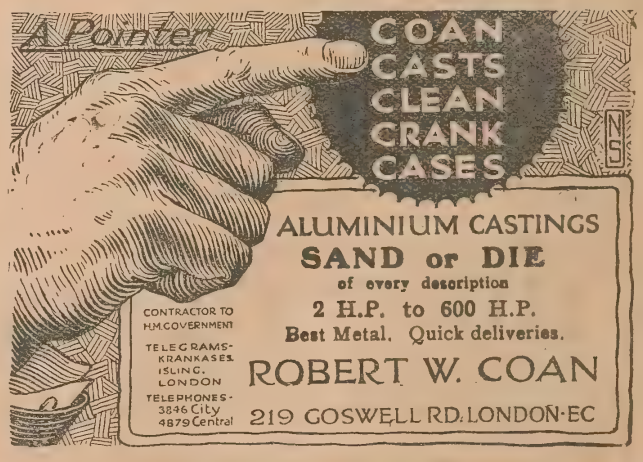
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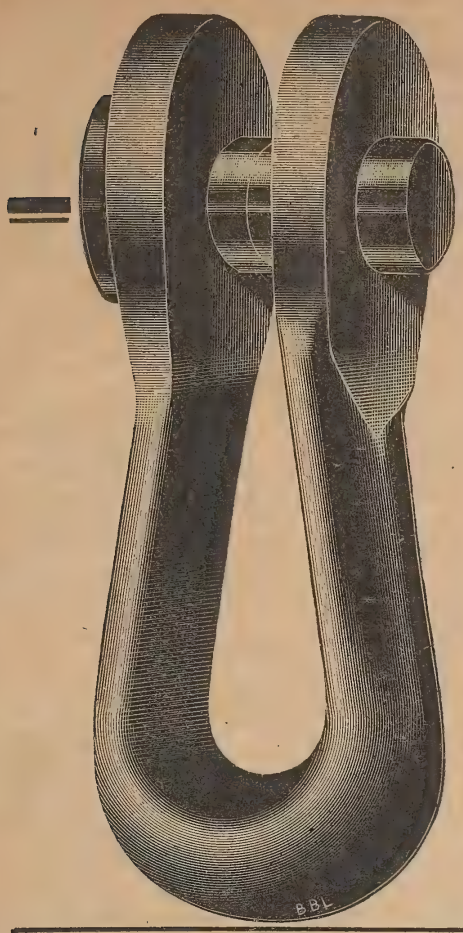
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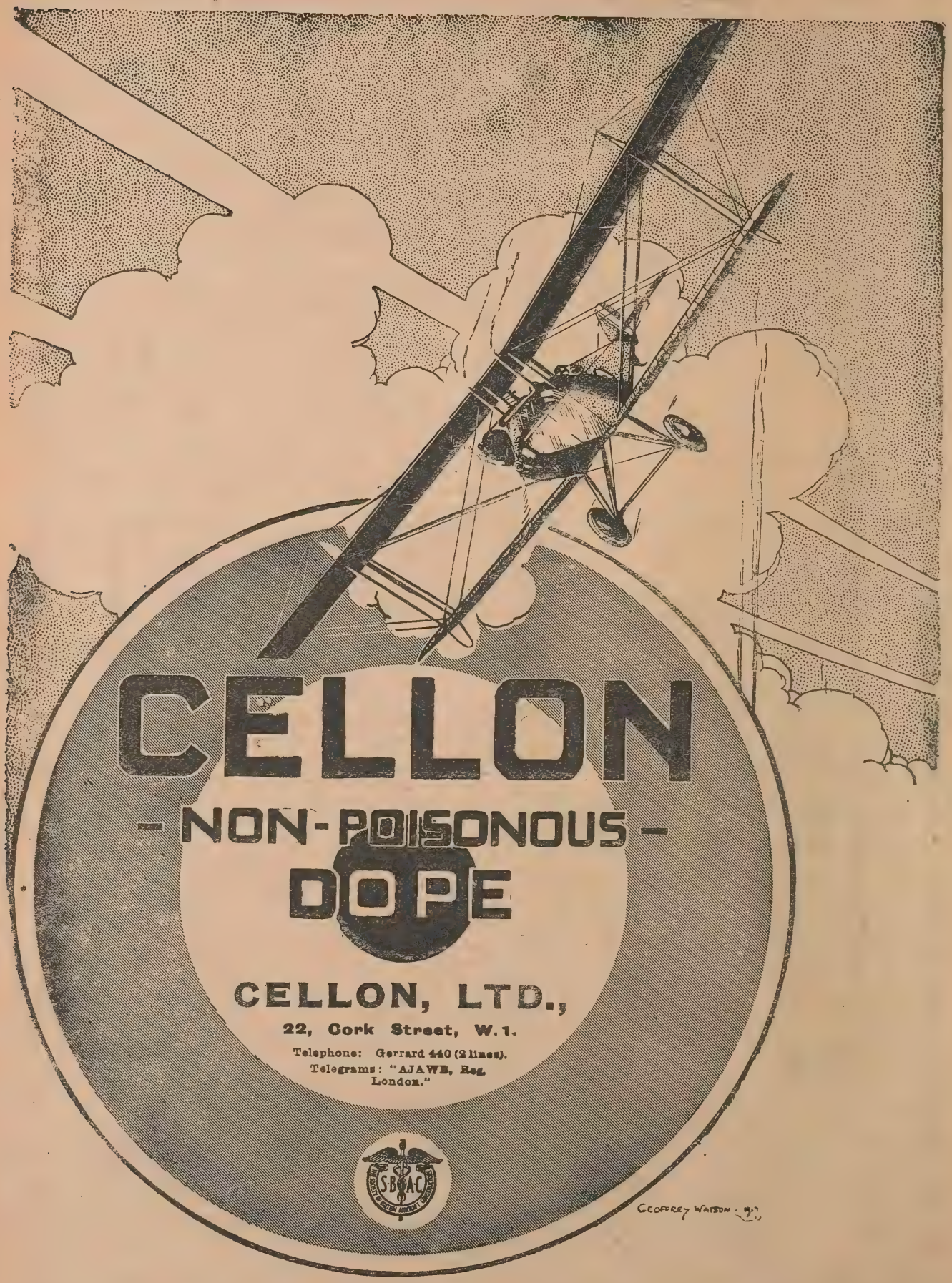
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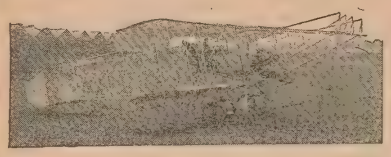
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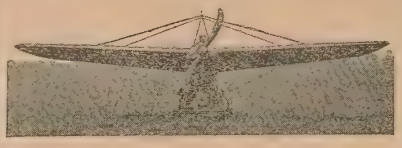
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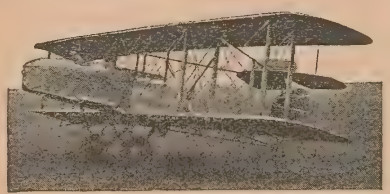
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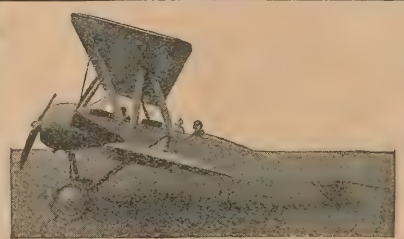
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It is impossible, for obvious reasons, to print photographs of machines such as the Company are building at the present time; though it is permissable to say that such construction is increasing constantly, not only in volume, but also in technical importance.



The machine built for the "Daily Mail" seaplane race of 1914. (Seen here with a land chassis.)



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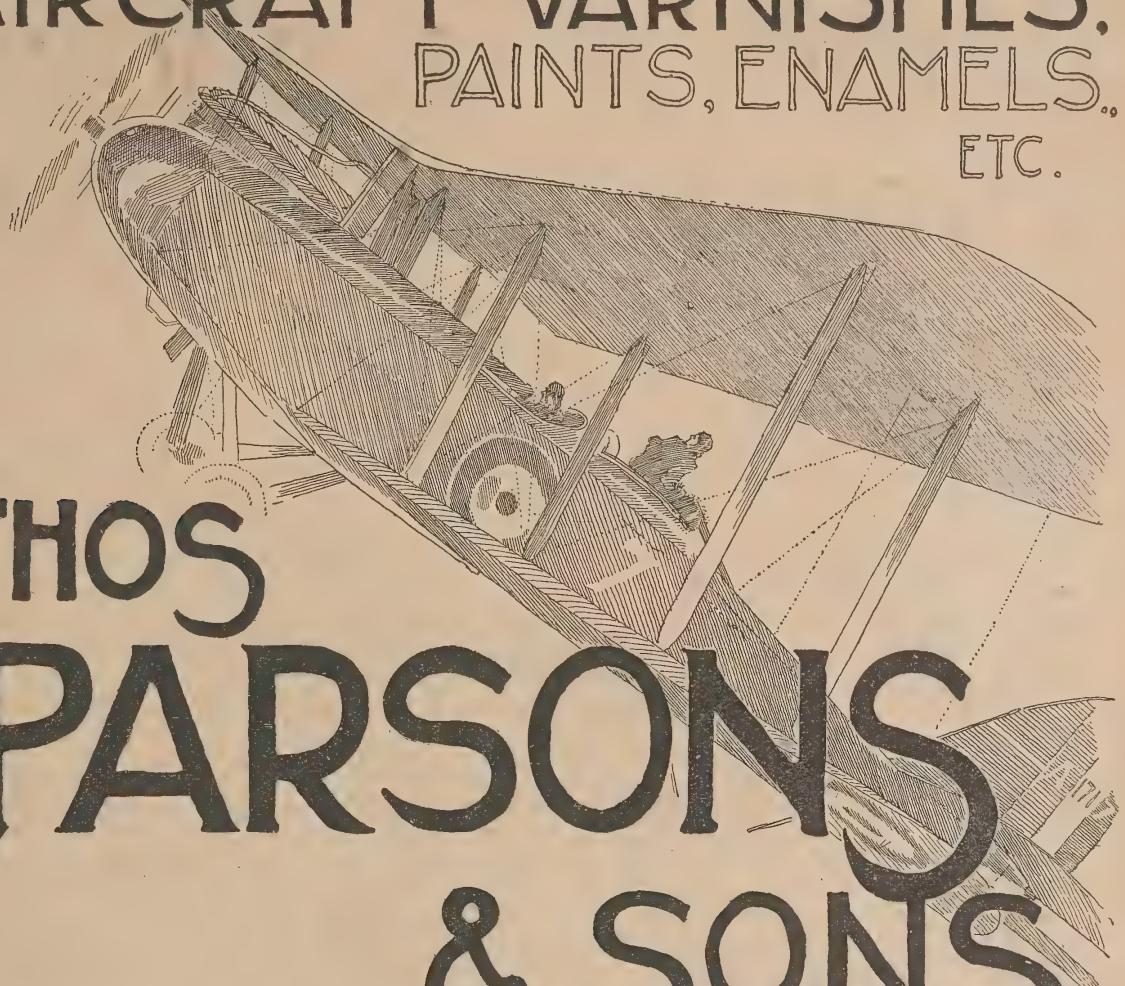
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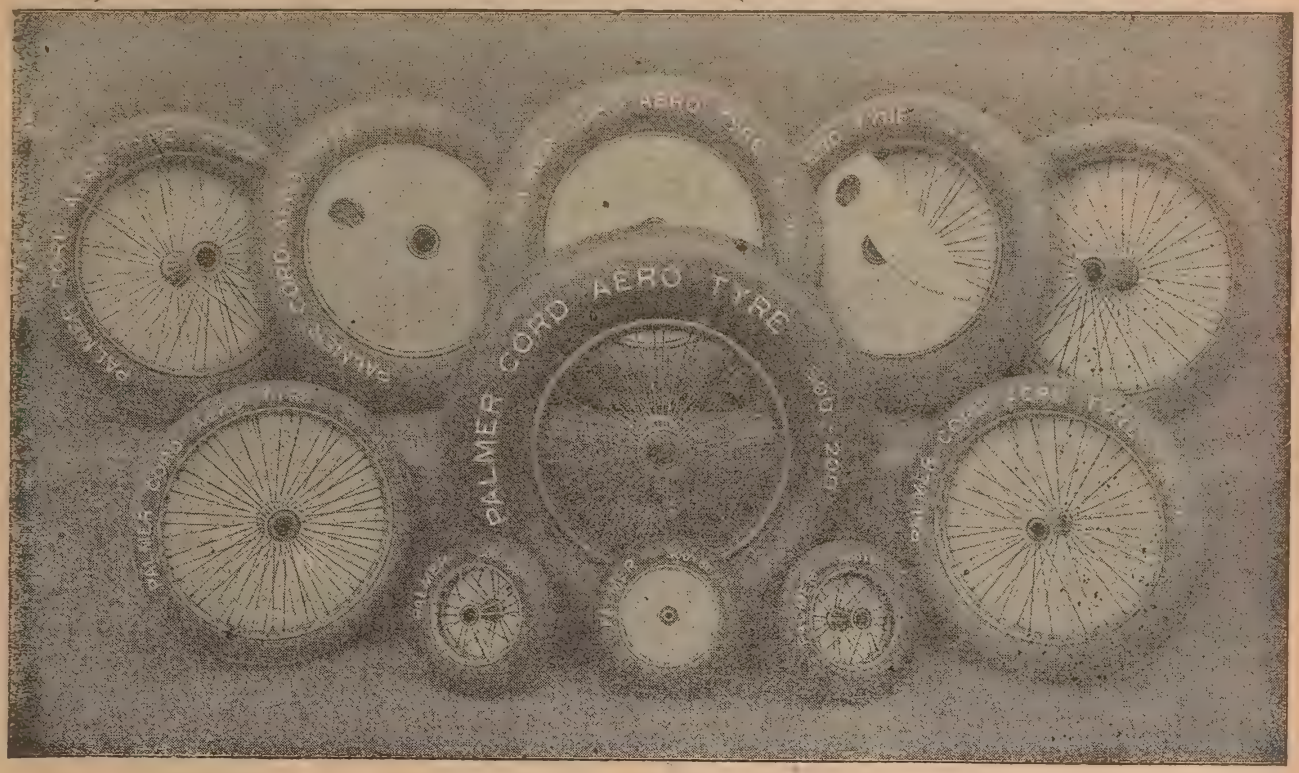
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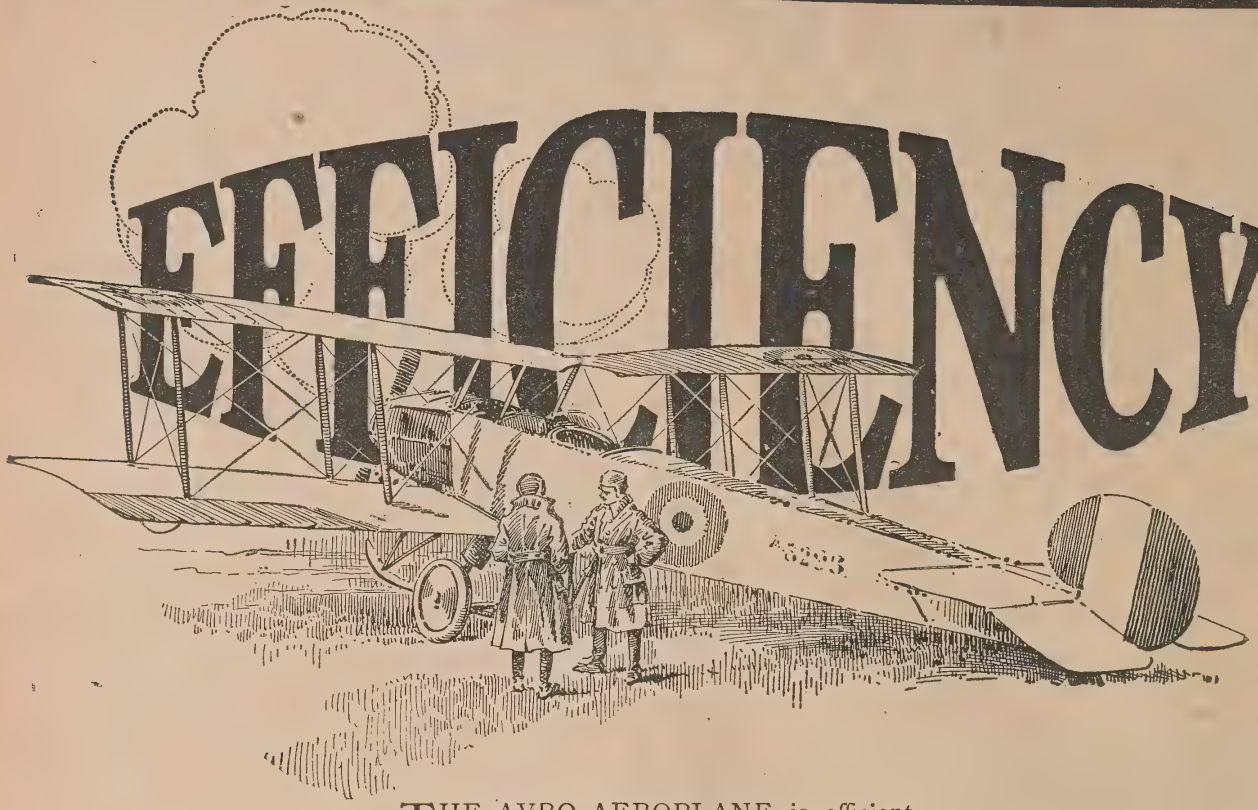
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THE KING'S MESSAGE.

The following message was sent on Nov. 11th. :

To the Right Hon. Lord Weir, Secretary of State and President of the Air Council.

In this supreme hour of victory I send greetings and heartfelt congratulations to all ranks of the Royal Air Force. Our Aircraft have been ever in the fore-front of the battle ; pilots and observers have consistently maintained the offensive throughout the ever-changing fortunes of the day, and in the war zones our gallant dead have lain always beyond the enemies' lines or far out to sea.

Our far-flung squadrons have flown over home waters and foreign seas, the Western and Italian battle lines, Rhineland, the mountains of Macedonia, Gallipoli, Palestine, the plains of Mesopotamia, the forests and swamps of East Africa, the North-West frontier of India, and the deserts of Arabia, Sinai, and Darfur.

The birth of the Royal Air Force, with its wonderful expansion and development, will ever remain one of the most remarkable achievements of the Great War.

Everywhere, by God's help, officers, men and women of the Royal Air Force have splendidly maintained our just cause, and the value of their assistance to the Navy, the Army, and to Home Defence has been incalculable. For all the magnificent work, self-sacrifice, and devotion to duty, I ask you on behalf of the Empire to thank them.

GEORGE R.I.

November, 11th, 1918.

ON THE IMMEDIATE PRESENT.

It really seems that we are close to the end of the war and are on the edge of the "cataclysm of a devastating peace," as someone has aptly described it. Naturally, for the sake of the men in the field and of those dear to them at home, one is glad that there is little chance of the war continuing. Yet, for the good of the British Empire as a whole and of the Royal Air Force in particular, it is a pity that the Germans were unable to hold out for another six months at least.

If the real war stops forthwith, it means that all our futile politicians will be able to appeal to the stupid but honest electors of this country as being the men who have led them to victory, and thus they will, in all probability, be returned to Parliament with enhanced power. Whereas, if the truth were known, as it would be now but for the "nobbling" of the British Press by the hangers-on of the Government, and as it would be anyhow in six months or so, the people would realise that the British Army has won the war in spite of, and not because of, its political mis-leaders.

In the same way, the various "technical experts" of the Royal Air Force, pointing to the superiority of the R.A.F. during these latter days of the war, will claim that they, by their great technical ability, have won the war in the air, whereas, to state again the plain, blunt truth as it was stated in these pages in slightly different words a month ago, the technical people to-day are as grossly incapable as those whose incompetence led to the notorious Air Inquiry of 1916, but it would need another campaign next year to force that truth on the public knowledge. The R.A.F. has won the war in the air by the individual gallantry of the active-service personnel, by the able leadership of its general officers in the field, and by the skill of its technical personnel abroad, and in spite of the incompetence of the officials who have so conspicuously failed in their duty at home.

Yet, when people begin to talk about After-the-War Aviation, as many are doing to-day, it will no doubt be these same stay-at-home "experts" who, having so skilfully avoided the perils and discomforts of active service, will be given all the best jobs in whatever work the Air Ministry may find for the Royal Air Force to do. This is a little matter on which the active-service aviators will do well to keep an eye when they return from the war. The first test of a man's suitability for a good job at home should be, "What is his active-service record?" And the rule should be "No active service, no job."

When it comes to mental ability, technical skill, and administrative competence, there are far better men in all the war areas abroad than there are in any office chairs at home, barring perhaps a few of the early active-service people who have been invalided into home jobs already. But, it will be well to lay down the law that the men who have won the war are the men who are to have the good jobs afterwards. And, most emphatically, the technical "experts" under the Air Ministry and the Ministry of Munitions, at the Bolo House and its annexes, are *not* the people who have won the war.

Is the War Over?

At the same time, one is by no means convinced that the war is yet over. There is still much political jiggery-pokery to ensue before a definite peace can be declared, even now that the armistice is signed. We are multifariously told that we cannot trust the German politicians who are negotiating peace terms. One is at least as prepared to trust them as any of our own politicians. So far as one can gather, for example, Prince Max of Baden is a middle-aged gentleman of good family who has lived an irreproachable life. There is no public knowledge of his ever having been mixed up in the German equivalent of a Marconi scandal, nor is he known to have endeavoured to stir up class war against the legitimate rulers of his country by cultivating the sport of Limehousing. And one mistrusts the German "democratic" leaders no more and no less than one mistrusts our own mob-leaders who pose as patriots for the time being.

Why then question the *bona fides* of the German politicians? Because, forsooth, there was once a political catch-phrase concerning a "scrap of paper." Is Germany the only country which has ever torn up a treaty or played dirty political tricks when war or diplomacy made them expedient? One seems to have read in the journals pertaining to our great and gallant French Allies, in the days of one's youth, of a nation to which reference was frequently made as *"perfide Albion."* Possibly *Albion* did not deserve the epithet, but some millions of excellent Frenchmen believed in it.

Tempora mutantur is true enough, but one has always had grave doubts about the *et nos in illis* part of the tag. The French phrase, *Plus ça change, plus ça reste la même chose,* much nearer the mark. Politicians and diplomatists are much the same the world over, except that some are more astute than others. Therefore one is quite prepared to believe that we can trust the German politicians to adhere as honourably to their peace terms as our politicians intend to adhere to theirs.

But the question does not rest entirely with the politicians by any means. There are the German Army and the German People to be considered.

If we can make a decent peace with a stable German Government, as Lord Milner—apparently our only statesman—so wisely advised, all may be well. But if red flag Socialism and Anarchy and Bolshevism take hold in Germany as they have done in Russia, then we may well find ourselves only at the beginning of another war, and we may well be still fighting the Germans a year hence, which means another year or two of guerilla, and much more hard work for the R.A.F.

We talk gaily of indemnities, and of making Germany pay for the war, but unless we make peace with a stable Government we stand a precious poor chance of collecting our debts. If Bolshevism breaks up the German Empire then we and our Allies will have to wade into Germany and clear up the mess. And it will take a mighty big army to police a chaotic mass of some 80 millions of people even if they are only unanimous in one idea, namely their hatred of the invader.

Defending the Fatherland.

It is even possible that if, even now that an armistice is signed, and after all the so-called "safeguards" have been provided, the ultimate peace terms are made too severe, a German leader may arise who will persuade the people to defend the Fatherland. For, be it recollected, no enemy foot has yet touched the soil of Germany—Alsace is not Germany, remember—except as a prisoner, and the German is intensely patriotic. Therefore we must be prepared to fight next year in Germany much as certain German units are even now fighting in Russia.

If it comes to a fresh outbreak of war, despite a preliminary armistice, it appears to be easier for the German military classes to persuade their men to defend their own soil than for the Allies to begin a fresh attack. The German Army, with knowledge of the atrocities committed by some of their own troops in France and

Belgium, would, very naturally, expect retaliatory atrocities from the French and British if ever they penetrated into Germany, and that alone would stiffen them for a fight if they once had their backs against the wall of the Rhine. And that seems to be pretty well where the real strength of the German Army is to-day.

Germany's Line of Defence.

The Allied campaign of 1918 under Marshal Foch and Sir Douglas Haig—whose brilliant work was recently brought to the notice of our Mr. George by Marshal Foch—has been a wonderful affair, but when military history comes to be written twenty years hence, the German retreat will be set down as one of the greatest military feats of all time, and Prinz Rupprecht of Bavaria and General von Böhm will appear as two of the greatest soldiers. The German Army to-day is, like the British Army after Mons, "a beaten army, but not a broken army," and when the *parlementaires* visited Marshal Foch it was still fighting its way steadily back to its defensive wall on the Rhine. A recent communiqué concerning the work of the Independent Air Force states definitely that the Metz railway triangle has been constantly bombed in the endeavour to prevent men and material from reaching the Rhine.

The capture of Sedan, or Hirson, or Valenciennes, could not cut the German Army in two, for the great forests of the Ardennes have always divided it. The stand of the Germans along the Valenciennes, Le Quesnoy, and Bavai line was merely a delaying action to prevent their troops in Belgium from being taken in flank. When once Western Belgium was clear, there was no object in holding on anywhere west of the line joining Metz, the Meuse, Namur, and Antwerp.

Given that the bulk of the German armies, and most of their matériel, is back past the Rhine, the rest can comply with armistice demands in Alsace-Lorraine, and still leave a strong defending force, in case the peace negotiations fall through. Weeks ago our benighted war correspondents wrote gleefully of German howitzer batteries being reduced from four guns to two, and assumed that this was the result of war wastage. It never seems to have struck them that in all probability the other two guns had gone back to the Rhine, to form with their crews the nucleus of a fresh battery with the old traditions.

Hard Work to Come.

One will believe in peace with Germany when there is an Allied Army of occupation in Berlin, and not till then. Meantime anything may happen. And in any case there is likely to be plenty of hard work for the Royal Air Force for many months to come.

In the first place, if the present Armistice talk does not mean final peace, and if the German Army does elect to make a final stand beyond the Rhine, then it will be very largely the duty of the Royal Air Force to persuade the German people by means of real bomb-attacks that peace is worth having at any price.

In the second place, if Germany breaks out into Bolshevism—which Heaven forfend—than the R.A.F. will have the chief job of chasing Bolshevik mobs. This ought to be a really amusing job for all types of aviators, though especially so for the regular ground-strafers. The chief drawback would be that the Bolsheviks would not take aviators prisoners and treat them well, as was the custom of the German Army in the field.

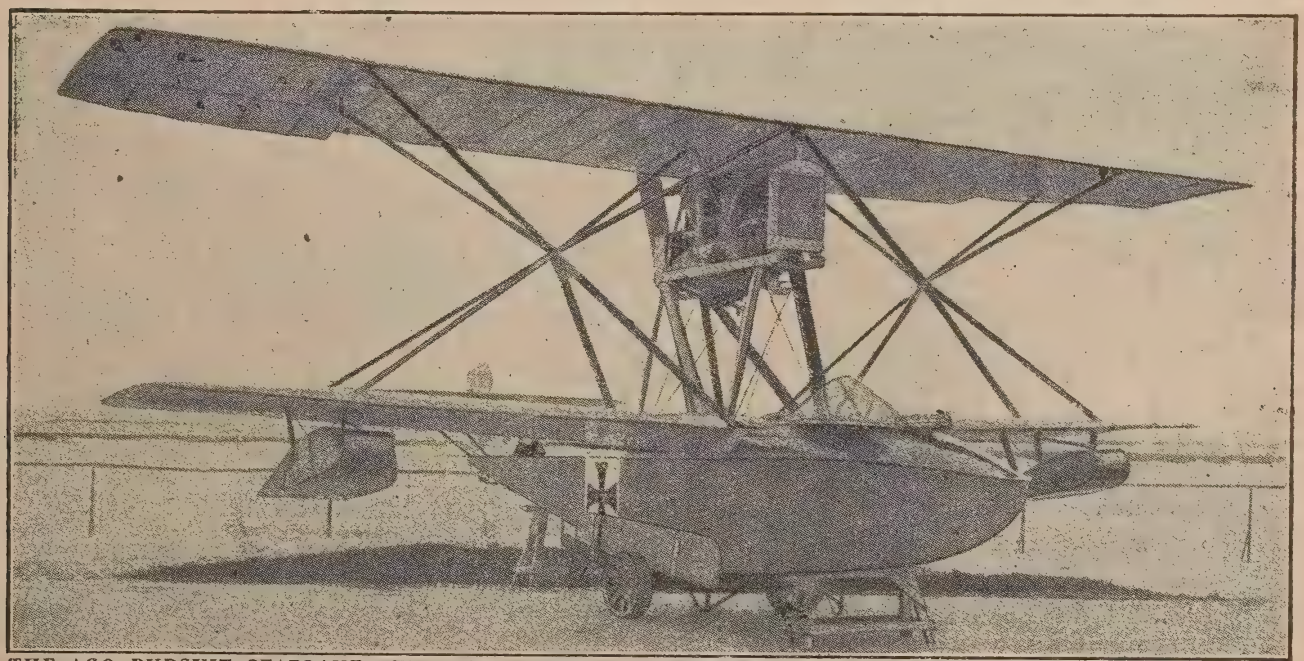
And in the third place, if peace really comes, there will still be a vast amount of police work, communication work, and postal work to be done by squadrons now at the front before they can finally return home. Therefore, even under the most favourable circumstances, one scarcely expects that any of the squadrons at present in France will come home for at least six months after peace is declared, and that may be six months or more after the Armistice is signed.

Which is all the more reason why something definite should be done at once to assure fair treatment for the active-service people when they do at last return, and to guard against all the best jobs being stolen by the stay-at-homes who have so carefully avoided the discomforts of war.

Bolshevism.

Actually the chief danger to the world at large at the moment is the spread of Bolshevism, or Syndicalism, or red flag Socialism—they are all much of a muchness. The spreading of disloyalty in an enemy country by means of propaganda is a dangerous weapon which is liable to kick back.

The Germans spread Bolshevism in Russia, and have become seriously infected themselves. They connived at, or encouraged, the dethronement of His Im-



THE AGO PURSUIT SEAPLANE.—The curious arrangement of the interplane struts, which eliminates all external cable bracing, is noteworthy.

perial Majesty the Tsar, and now they have lost their own Kaiser, who, whatever his faults, is a monarch who has done his best for his people.

Certain people in this country have preached republicanism unchecked by our Mr. George and his Cabinet, and in our public Press the rebel Socialist Liebknecht has been held up as a German hero. Between Liebknecht and our Ramsay MacDonalds and Philip Snowdens and Wellses there seems to be little difference. And the people who endeavoured to spread republicanism in Germany by their propaganda may, for all one knows, have done a grave disservice to our own good King. One can only hope that the wave of Bolshevism and disloyalty which broke among the yellow hordes of Russia may weaken as it passes over the Teuton tribes of Germany, and may reach our shores as a mere ripple.

There is more than enough Bolshevism talked in the workshops of England, but one believes that in the main the British workman is loyal to his King and recognises the need for an aristocracy. That he is fed to the teeth with Mr. George and the mob of grafting bureaucrats is another question altogether, and very easily understandable. One is strongly of the opinion that Mr. George's attempt to sweep himself into office afresh as the leader of a victorious nation will not meet the success for which he hopes. Even his great parade of captured German guns will hardly help him, for people will be rather apt to remember that those guns were captured through the genius of Sir Douglas Haig, whose existence Mr. George so pointedly ignored till he was jogged in the memory by Marshal Foch.

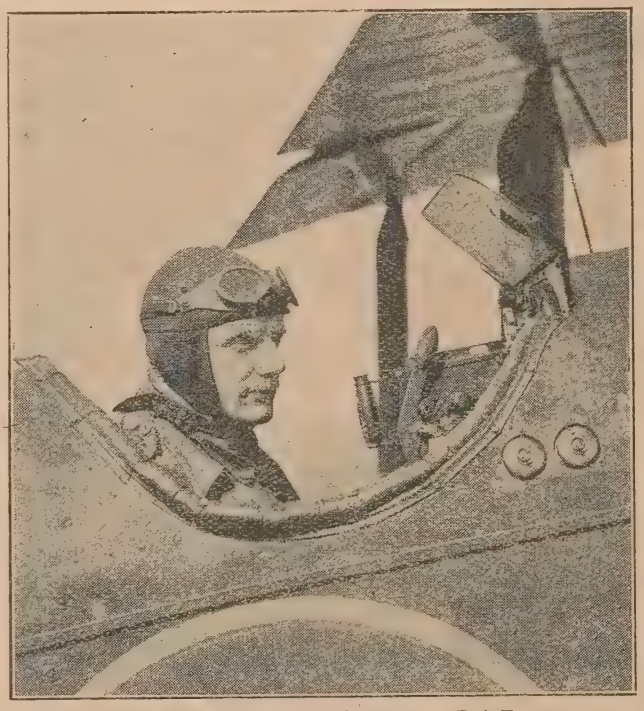
Still there may be here and there some attempts at Bolshevism, and, if so, it is comforting to remember that Bolshevism can make but little headway so long as the Royal Air Force remembers that it is a Royal Force. The R.A.F. has very clear memories of how it was let down by the strikers of Coventry and elsewhere, and it would have but little mercy on a Bolshevik mob, if once let loose on them with bomb and machine-gun. Therefore, if there is any talk of Bolshevism going about, it may be well to remember that the R.A.F. pilots and observers have had much excellent practice during the German retreat in operating against mobs on roads and in streets.

One trusts that this may not be the ultimate war-job of the R.A.F., but, if it should become so, one feels certain that it will be done as thoroughly as all the rest of the R.A.F.'s work. Meantime, however, we have still to see the end of the German resistance.—C. G. G.

THE DEATH OF A PIONEER.

All will hear with deep regret of the death of Captain B. C. Hucks, R.A.F., who died in London of pneumonia, following influenza, on Wednesday, November 6th.

Benfield Charles Hucks may justly be classed among the pioneers of British aviation. He was born at Stanstead, Essex, in 1884, the son of an engineer, and was himself educated as a mechanical engineer, serving his time in the workshops. When M. Blériot flew the Channel in 1909, young Mr. Hucks was inspired to take up flying as a profession, and early in 1910 he joined Mr. Grahame-White as a pupil, acting at the same time as an engineering assistant. With Mr. Grahame-White he toured England and America, and he frequently flew with him as a passenger.



The late Captain B. C. Hucks, R.A.F.

Early in 1911 he joined Mr. Robert Blackburn, who was then experimenting on the seashore at Filey, and there he learned to fly, taking his certificate (No. 91, dated May 30th, 1911) on a Blackburn monoplane. He and Mr. Conway-Jenkins—now Brigadier-General, R.A.F.—composed the Blackburn team in the "Circuit of Britain" race of that year. Mr. Jenkins upset at Brooklands at the start, but Mr. Hucks, if one recollects aright, reached Harrogate before being stopped by engine failure.

Later in the year Mr. Hucks bought that same Blackburn monoplane and went on an exhibition tour in the West of England. This tour had the highest value as a missionary journey. Owing to the meticulous care with which Mr. Hucks treated his machine and engine, he was always able to carry out his exhibitions strictly to schedule time, unless prevented by impossible weather, and owing to his skill as a pilot he was able to fly in weather which would have defeated most aviators of the period.

When flying was impossible, and also before and after his flights, it was his custom to assemble the visitors at his temporary aerodromes round his machine and lecture to them on the operations of an aeroplane and on the future possibilities of aviation. Thus he inspired with interest in flying many people who have since done valuable work for the Flying Services.

In the course of this tour he flew from Weston-super-Mare to Cardiff and back, becoming the first to cross the Bristol Channel by air. It is remarkable that in three months during which the tour lasted Mr. Hucks had only one accident, and that of quite a trivial nature, involving only the replacement of a skid broken by running into a hedge. This notable success was due entirely to the combination of thoroughness and skill which in later years made Captain Hucks' services of such great value to the Royal Flying Corps at home and abroad.

In 1912 Mr. Hucks acquired a Blériot two-seater monoplane, and on it he continued his exhibition flying, running his shows in a thoroughly business-like way, ably assisted by his business manager, Mr. Savage. He never disappointed his public, and he always kept himself up to date in the latest aeronautical developments. Thus, when M. Pégoud introduced looping the loop as an exhibition performance, Mr. Hucks promptly bought a single-seater Blériot and did likewise, becoming in consequence the first British pilot to loop—at any rate

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21. RUE DU MONT THABOR.

voluntarily, for Mr. Gordon England had already done so by accident on the Cedric Lee circular monoplane some months before M. Pégoud.

Mr. Hucks' looping and trick-flying performances and his passenger-carrying flights continued with marked financial success right up to the outbreak of war, and one feels sure that if a greater number of those concerned with aviation in its early days had run their affairs with the same direct regard to business, and with the same care and skill in mechanical matters, far greater progress would have been made in British aviation.

On the outbreak of war Mr. Hucks joined the R.F.C. and went out to France shortly afterwards. He did a great deal of war flying, but his health gave way. Some time before the war he had had a serious attack of pleurisy, from which one believes he never fully recovered, for it was lung trouble which primarily caused his breakdown on active service, and it seems likely that this weakness contributed to his fatal illness.

After returning from the front, Mr. Hucks continued to do valuable test work at home, and was promoted to Captain. Later on, Mr. Holt-Thomas, with his gift for recognising personal ability in others, borrowed Captain Hucks from the R.F.C. to test the various machines then being made by the Aircraft Mfg. Co., Ltd., to the designs of Captain Geoffrey de Havilland. Consequently Captain Hucks was seconded for special duty and continued to test the famous D.H. machines until his death.

At this work his long experience, his skill as a pilot, and his strict regard for detail has been of the highest value, and none is more ready to acknowledge the assistance given by Captain Hucks in developing the D.H. machines than is their distinguished designer. Thus, despite his absence from the fighting area, one may say in all truth that Captain Hucks has contributed very materially to the attainment of that superiority in the air which has enabled the Royal Air Force of late to influence so remarkably the results of the war on the ground.

Personally "Benny" Hucks, as he was called by all his friends, was one of the most likable of men. Though very certain of the correctness of his own opinions, and full of confidence in his ability and judgment as a pilot—as his long and successful flying career entitled him to be—he never thrust his theories down the throats of others, and he never "swanked" about his flying. He was always ready to talk, and he talked well, but he never insisted on talking. Consequently he won that confidence in his ability which he so well deserved. He worked hard, and in his spare time he enjoyed life thoroughly.

A pilot of superlative skill, a mechanic of more than ordinary ability, a sound business man, and a good sportsman, Benny Hucks would have gone far in the future developments of commercial aeronautics had he lived. He leaves to mourn his loss such a number of friends and admirers as is not the lot of any ordinary man.—C. G. G.

THE ENEMY AIRCRAFT EXHIBITION.

The Royal Air Force Exhibition of captured enemy aircraft to be held at the Agricultural Hall, Islington, will be officially opened at 3 p.m. on Nov. 15th, by the Secretary of State for Air, the Right Hon. Lord Weir of Eastwood.

An entire Gotha that has been reconstructed from the remains of eight separate Gothas, brought down during different raids, will form one of the exhibits.

A complete observer's cockpit from a German machine will be shown, containing all the numerous "gadgets," including machine-gun, ammunition, camera, bomb sights, bomb release, electric warming apparatus, telephone, etc. A German pilot's "office" will also be shown in the same way, with all engine and machine controls, and the various flying instruments. There will be shown the engine from Rittmeister Baron von Richthofen's machine, and the actual aeroplane flown by the Kaiser's kinsman, Prince Karl Friedrich of Prussia, who was brought down in the British lines. Another exhibit shows the effect of a fall from a great height. This is a German machine which was shot down by an English pilot, and nose-dived to earth from 6,000 ft.

Disabled soldiers from Lord Roberts' workshops will be seen at work making trophies from material of crashed German machines, and will offer them for sale for the benefit of the institution.

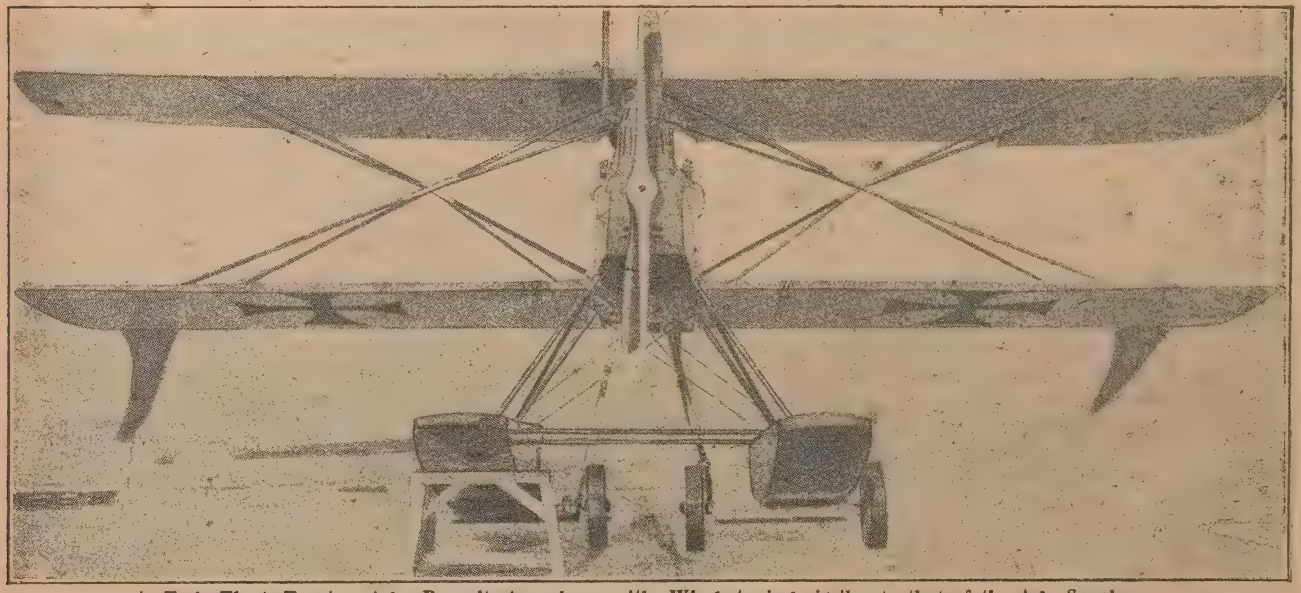
The exhibition will be the first of its kind (outside Germany), and will provide a unique opportunity for the public to become acquainted with the types of enemy machines.

THE ROYAL AERONAUTICAL SOCIETY.

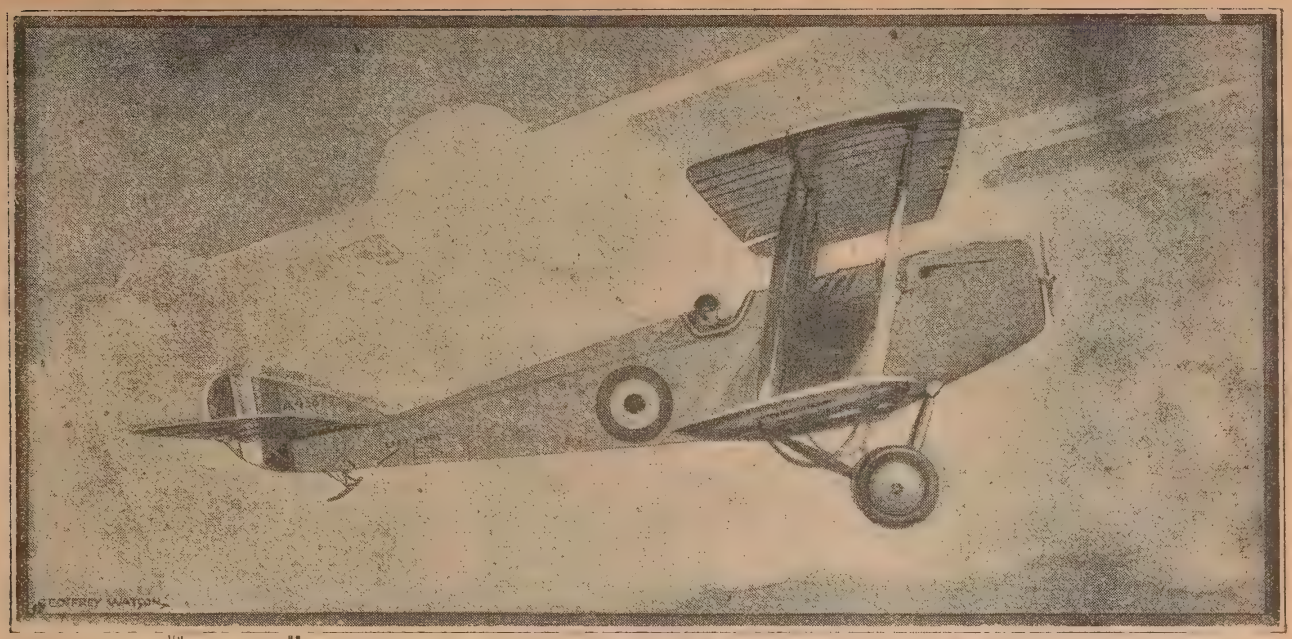
On Friday, Nov. 8th, the first meeting of the autumn session of the Royal Aeronautical Society was held at the Central Hall, Westminster, with Maj.-Gen. W. S. Brancker, R.A., in the chair.

Maj. Kennedy-Cochrane-Patrick, D.S.O., M.C., R.A.F., read a paper on "Fighting in the Air" to a crowded and interested audience.

The general temporary dislocation of labour, resulting on the signing of the Armistice, has rendered it impossible to give an illustrated report of the lecture in the current issue of The Aeroplane, but it is hoped to print a lengthy account in next week's issue.

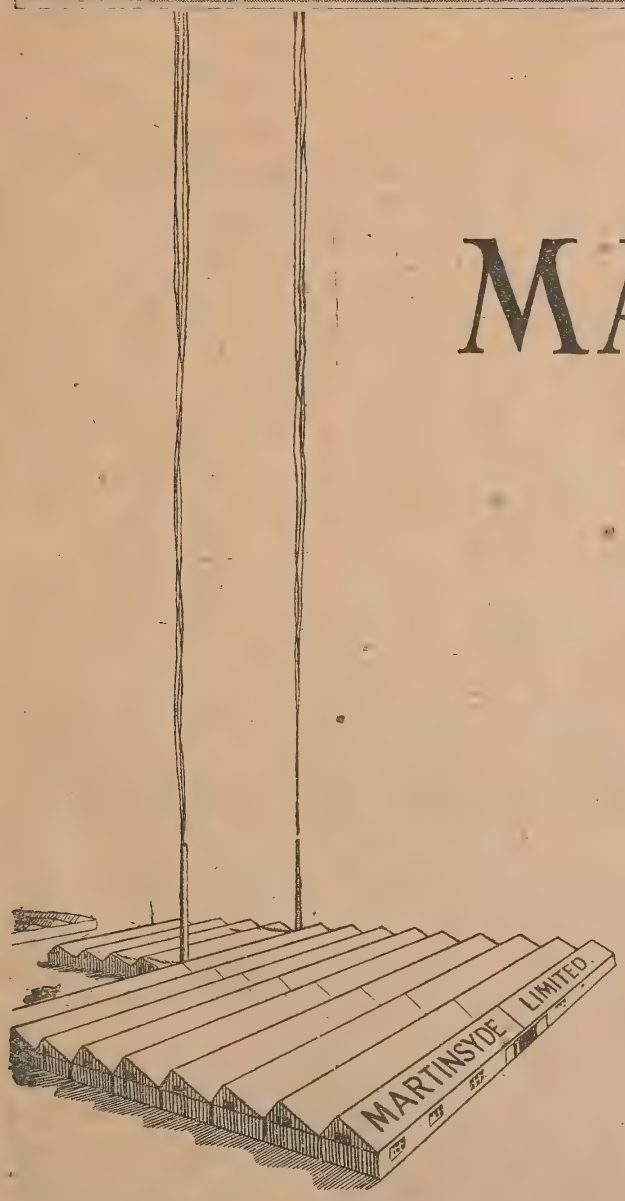


A Twin-Float Tractor Ago Pursuit Aeroplane with Wing-staying similar to that of the Ago Seaplane.





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ARMISTICE TERMS.

Among the conditions of Armistice granted to Germany by the Allies and the United States the following deal with aircraft:—

IV.—Surrender in good condition by the German Armies of the following equipment:—

2,000 Aeroplanes (Fighters, Bombers—firstly D.7s—and night-bombing machines).

XXVII.—All Naval Aircraft are to be concentrated and immobilised in German bases to be specified by the Allies and the United States of America.

XXVIII.—In evacuating the Belgian Coasts and Ports, Germany shall abandon all merchant ships, tugs, lighters, cranes and all other harbour materials, all materials for inland navigation, all aircraft and air materials and stores, all arms and armaments, and all stores and apparatus of all kinds.

XXXIV.—The duration of the Armistice is to be 36 days, with option to extend. During this period on failure of execution of any of the above Clauses, the Armistice may be denounced by one of the contracting parties, on 48 hours' previous notice.

* * *

The following is among the conditions of armistice with Austria-Hungary:—

All Naval aircraft are to be concentrated and immobilised in Austro-Hungarian bases to be designated by the Allies and United States of America.

IS IT PEACE?

In view of the "Peace" celebrations it is interesting to note that the Secretary of the Admiralty issued on November 11th a wireless message issued at 2.45 a.m on that day from the "Command and Soldiers' Council" of the German rebels at Strasburg. This message, which was sent to all German ships, destroyers and submarines in the North Sea and Baltic contained extracts from the Armistice terms of the Allies concerning the handing over of submarines and other warships to the Allies, and the "destruction of all German Naval Air Forces," which last is not mentioned in the Armistice conditions.

It also stated that the blockade "instituted in defiance of international law against the German people is to continue." The message continued, "German comrades, defend our country against this unheard-of presumption," and it called upon all submarines in the Baltic, except those on out-post duty, to assemble at Sassnitz. This does not look like an immediate peace.

LORD WEIR ON THE R.A.F.

At the Lord Mayor's banquet at the Guildhall on Nov. 9th, Mr. Sheriff Banister Fletcher proposed the toast of "The Imperial Forces of the Crown: the Navy, the Army, and the Air Force."

Lord Weir, who responded for the Air Force said:—

To-night, for the first time in the history of your great banquet, the Air Service of the Crown is joined with the Navy and Army in receiving tribute of honour which the citizens of London pay to the Imperial Forces; and it is a very great privilege for me, and a great responsibility, to be the first Minister of the Service to whose lot it has fallen to return thanks to you on behalf of that Force. Allow me, then, in the name of the officers and men of the Royal Air Force, to express my sincere and whole-hearted appreciation of the warm and generous tributes which have been so eloquently made by Sheriff Banister Fletcher.

To-night I have to speak on behalf of units of the Royal Air Force serving with the Navy on many a coast, and on many a ship; of units serving with our great Army in all the many theatres of war; and of units serving also with that new Force which has become a factor in modern warfare—the Independent Air Force (cheers)—and when I refer to that Force, let me simply say that the only competent critic of the Force has been the enemy. (Laughter.)

The officers and men of those units would, I am sure, desire me to say to-night that, whatever measure of service they may have rendered through the new medium of the air—service of great value, of great variety in measure and in targets, stinted only by weather—that service has been inspired and intensified by the glorious example set to them by the two senior Services.

In regard to the home units, the School of Training Squadrons—that gallant force of flying instructors, whose work, if not so spectacular, is none the less creditable—these men have their reward in the success of their overseas comrades, whom they have trained and equipped.

The Air Force is in every sense young—born but yesterday—manned, may I say, by boys whose qualities of courage, self-sacrifice, and skill have earned the immeasurable admiration and gratitude of all. (Cheers.) Their record is surely an unmistakable proof of the soundness on which our Empire is built, and it is full of hope for the future, associated, as it has been, with the technical skill, the ingenuity, and the adaptability of the British designers and the British manufacturers. Our indebtedness to them is very great for the knowledge and the resources placed ungrudgingly at our disposal without restriction and without thought of private interests.

To-night I feel that we are all conscious of living through hours pregnant with historical possibilities. It is a great night. At any moment, we hope, we may have reached the end of these years of sacrifice and of struggle, and may look forward to an era, no less strenuous, perhaps, but one in which construction rather than destruction will be the subject of our united efforts. (Cheers.)

The future of aviation—the future, perhaps, of the Air Force—will come, I hope, from the needs of peaceful commerce rather than from the tragic necessities of war, and one of the duties of the Air Force will be to maintain and still further develop that degree of technical superiority which we have now achieved. As regards the other source of our success—the quality of our youth—that will never fail us. It is bred in the soul and fostered by the spirit and tradition of a free people. (Cheers.)

ALLOWANCES AND PENSIONS.

The Ministry of Pensions forwards the following for publication:—

It is desirable that wives and dependents of men serving in His Majesty's Forces should know of their right to claim additional allowances under the Regulations of the Special Grants Committee of the Ministry of Pensions.

Allowances and grants are made through the Local War Pensions Committees to whom all applications should be addressed. The address of the Local War Pensions Committee can be obtained at the nearest Post Office. Applications should not be made direct to the Ministry of Pensions as this will involve delay.

The following are some of the most important provisions contained in the Regulations:—

1. Wives and children.

(a) A childless wife who is unable for any reason to earn is entitled to an allowance of 6s. 6d. per week.

(b) A wife is eligible for an allowance towards rent, insurance premiums, hire purchase payments and other contractural obligations undertaken by her husband before his enlistment, if the total amount of these obligations does not exceed 12s. a week. It is necessary for her to show that her Separation Allowance and other income is not sufficient to make good the loss caused by her husband"s enlistment after allowing for the saving due to his absence. If the husband enlisted before Jan. 1st, 1918, the Local War Pensions Committee will take into consideration the wages he would have been earning at that date. If the total of the contractural obligations exceeds 12s. a week, application must be made to the Military Service (Civil Liabilities) Committee.

(c) If a child over 14 is at school, or is an apprentice earning only nominal wages, an allowance can be given to bring the Separation Allowance up to the amount which would be paid if the child were under 14.

(d) If a wife or her children are seriously ill grants may be given to assist in meeting the expenses of the illness.

(e) Maternity grants up to £2 are payable to a wife who is not herself insured under the National Health Insurance Act.

(f) Funeral grants may be given not exceeding £5 for an adult and £2 10s. for a child.

(g) Advances of Separation Allowance may be obtained if there is delay in the issue of the allowance.

2. Dependents.

Sickness grants, funeral grants and recoverable advances may be paid to dependents as in the case of wives. (1) A supplementary allowance may be given in respect of contractual obligations not exceeding 12s. a week if the maximum amount of Separation Allowance is being paid and this is less than the dependence on the man before enlistment (2) If the Separation Allowance is less than the maximum for the number of dependents concerned, and the bread-winner has died or become incapacitated since the enlistment of the man, a supplementary allowance may be granted. (3) A Special Allowance may be given to the dependent parent of a man who enlisted under the age of 23 before he was earning the full average wage payable in his trade or occupation. if it is necessary for the due upkeep of the home. (4) Allowances may be granted up to one half of the dependence, to meet the loss due to the increased cost of living if the dependent is unable to earn. The actual amount of the allowance depends on the date of enlistment.

LORD COWDRAY'S APPOINTMENT.

Viscount Cowdray has been elected rector of Aberdeen University, in succession to Mr. Churchill.

AN R.A.F. CONCERT.

A concert in aid of the Royal Air Force Aid Committee and Prisoners of War Fund will be held by the Technical Printing Section, Royal Air Force, on Friday next, Nov. 15th, at the Chelsea Town Hall, at 7 p.m.

[A linotype symphony ought to be one of the attractions.—Ed.]

The whole of the expenses will be defrayed by the officers of the Section. The Countess of Drogheda will conduct an auction of pictures, each on the subject of "Prisoners," and specially contributed by well-known artists. General Brancker, Colonel The Master of Sempill, and other officers, with representatives of Allied Aviation Corps, are expected to be present. Tickets (10s. 6d., 5s., and 2s. 6d.) may be obtained from the Officer Commanding, Royal Air Force, Royal College of Science, South Kensington.

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A DEMOBILISATION BOARD.

The Minister of Munitions has appointed a Demobilisation Board to deal with all measures affecting the demobilisation of munitions works and the liquidation of contracts, apart from the questions assigned to the Resettlement Board under the Minister of Labour.

The Board will consist of the following members:—

Sir James Stevenson, Bart., chairman.
Mr. H. H. Piggott, C.B.E, secretariat.
Sir Stephenson Kent., K.C.B., labour.
Mr. W. T. Layton, C.B.E., priority.
Sir Arthur Duckham, K.C.B., liquidation of contracts (aircraft and engines).
Sir Gilbert Garnsey, K.B.E, liquidation of contracts (all other contracts).
Mr. Alexander Walker, disposal and sale of stores.
Sir Keith Price, disposal of factories, etc.
Major-General the Hon. Sir F. R. Bingham, K.C.M.G., military services.

The Secretary of the Ministry (Sir W. Graham Greene, K.C.B.), the Assistant Secretary (Mr. J. E. Masterton Smith, C.B.), and the Chairman of the Finance Committee will be ex-officio members of the Board. The Board will be assisted by the following expert advisers:—Mr. S. Dannreuther, C.B., Sir Philip Henriques, K.B.E., Sir John Mann, K.B.E., Mr. W. J. Larke, O.B.E. Financial Department representatives will also be attached to members of the Board.

The Board will continue to be advised on Labour matters by the Resettlement Board under Sir Stephenson Kent, K.C.B., who remains a member of the Munitions Council.

R.A.F. CLUBS.

A well-supported movement is on foot to found Home Clubs for the men of the Royal Air Force. An appeal on behalf of these clubs is being issued by the Women's Auxiliary Force, whose Patron is H.R.H. Princess Arthur of Connaught, and whose President is Viscountess French. This appeal is signed by Sybil Lady Rhondda, the widow of the late Food Controller, who is a member of the Council of the W.A.F.

Home Clubs for soldiers and sailors founded by the Women's Auxiliary Force have been doing excellent work for the last three years in an obtrusive way by providing places of rest and recreation for the men. The individual clubs are of comparatively small size, and are run so far as possible in a homelike manner, and so are different from the large huts and institutes provided by other societies, as they are carried on in houses and shops fitted with the comforts of ordinary rooms. Judging by the number of persons using them, they are obviously appreciated by the guests.

Hitherto the cost of these Home Clubs has been provided by entertainments, small appeals and collections chiefly among the friends of the Women's Auxiliary Force, but now it has been decided to make a public appeal on a larger scale, especially in view of the need for clubs for cadets and aviators of the Royal Air Force. The Authorities of the R.A.F. have already accepted two of these clubs, and have expressed their willingness to state whereabouts other similar clubs would be appreciated.

The prospects of a favourable peace in no way diminish the need for such institutions. On the contrary, when R.A.F. units are brought back from abroad and the men are travelling about the country on leave, it seems that the need for such clubs will be still greater, for one hardly expects that the Air Force will be hurriedly demobilised. In fact, if after the war by God's good grace we should happen to have a sane Government, it is certain that the Air Force would rather be increased in size than decreased. In any case, the need for such clubs will continue for at least two or three years to come.

The lines on which these clubs are run make them almost self-supporting, so a matter of £500 will provide for equipping one club, and another £200 will keep it going for a year, and thus comparatively small sums do quite a large amount of good work. One therefore appeals to the readers of The Aeroplane to give the Women's Auxiliary Force such support as they can, earmarking their contributions specifically for R.A.F. Clubs. Donations should be sent to the Headquarters of the Women's Auxiliary Force, 172, Buckingham Palace Road, S.W.1.

LOW FLYING.

On Nov. 7th **Maj. Baird,** in a written answer to **Mr. Marriott,** stated that seven fatal accidents have occurred in the past three months at air stations in the district round Oxford in addition to the three accidents which have occurred at Oxford itself.

The orders against low flying over the city are impressed on all concerned, and severe disciplinary action has been taken in two recent cases in which they have been infringed. Public attention is being drawn to the orders that infringements may be reported as fully as possible. The Air Council would be grateful if members of the public would assist them in the matter by reporting the number painted in large block figures on the wings of any low-flying aeroplane.

THE R.A.F. MEDICAL SERVICE.

The following letter appeared in the "Times" on Nov. 8th:—

Sir,—Maj. Baird's statement in the House of Commons on the 4th inst. that the appointment of Director of Medical Service had been offered to Col. Fell, who would act on the principles of the Advisory Committee's Report, hardly coincides with the position as we see it at the moment, and the matter is of such vital importance not merely to the future of the Air Service, but to the whole medical situation throughout the country that we venture to trouble you with the following remarks.

The Report of the Flying Services Medical Advisory Committee, to give it its full title, was a long and carefully considered document, unanimously passed on November 29th, 1917, not only by the civilian members, but also by the representatives of the Admiralty, the War Office, and the Air Service.

Put shortly, the whole object of this Committee in formulating their scheme for an Air Medical Service was that promotion should be by medical efficiency, and not, as in the R.A.M.C., by administrative capacity.

The most important proposal involved the formation of a service in which specialisation and efficiency, assisted by a wise system of competition, would afford to the State a body of expert medical men who would rise in rank independently of the necessity of discarding the practice of their profession in order to assume administrative duties, which system prevails in the existing medical services.

The Report further contemplated the appointment of three Medical Officers for Training, for Air Command, and for Hospital Work, and four officers for the supervision of general pathology, sanitation, statistics, and medical supplies.

We will not trespass upon your space to describe in detail the proposals of the Committee; suffice it to say that, in our opinion, the ground was laid for a Medical Service superior to that of any existing force.

As part of these proposals a Medical Administrative Committee was instituted in order to assist the Medical Administrator of the Air Force in carrying into effect the principles of the Report. They have devoted nearly a year to this work, which is now to be thrown on one side.

It is known, moreover, that after the war the medical administration of the three Services will in all probability be amalgamated into one Imperial Medical Service, and it is of the highest importance from every point of view that the administration of this united Service should be scientific in the best sense of the term. Moreover, it is more than probable that the new Civilian Medical Service, which will presumably be the outcome of the Ministry of Health, will, in fact must, be founded on either the lines of the R.A.M.C. or the lines of the Air Force Medical Service, and again we suggest that it is of vital importance to such Civilian Service to commence on what we conceive to be the right lines.

Now, however, the work of the Advisory Committee is being undone by the Air Council. The office of Medical Administrator has apparently been offered to Col. Fell (a gentleman of whose administrative abilities we say nothing, but who, during the war, has occupied himself simply and solely with administration in various areas), with freedom from the control of the Medical Administrative Committee. It is possible that he may work on the principles of the Report, but it is hardly likely, particularly as Maj. Baird admits that the Administrative Committee has as such been dissolved, and we can find no trace of its retention in an advisory capacity as suggested by the Under Secretary; in fact, at the last meeting of the Committee on October 21 the chairman stated that the Committee was automatically dissolved and that there would be no further meeting.

Surely the Air Board will not, without consulting the Committee, which took so much pains to lay the proper foundations of the Medical Service, tear up all its work and lose the opportunity of founding a really scientific Medical Service for the new Air Force.

Yours, &c.,
W. Arbuthnot Lane,
G. A. Sutherland,
(Members Medical Advisory Committee).
W. Joynson-Hicks,
(Chairman, Parliamentary Air Committee).

November 7th.

COMMERCIAL AERONAUTICS.

All pilots and qualified technical people, whether officers or men, of the Royal Air Force who do not intend to follow a Service career after Peace is declared, and who are seriously interested in the prospects of commercial aeronautics after the war are invited to communicate with Capt. A. J. Swinton, care of The Aeroplane, 166, Piccadilly, W.1. Those communicating should state whether they are pilots, or, if technical people, what has been their precise experience during the war, or before it.



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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Nov. 2nd.

The King has been pleased to confer the following awards on officers and other ranks of the Royal Air Force, in recognition of gallantry in flying operations against the enemy :—

THE DISTINGUISHED FLYING CROSS.

Sec. Lt. (Hon. Lt.) FRANK GODSON (Linc. Yeo.).
This officer displayed great presence of mind and courage on a recent patrol. An enemy machine dived on him; after a short combat he forced this machine to land; he was then attacked by twenty enemy aeroplanes. In the fight that ensued his pilot was wounded, but Lt. Godson, assisting the pilot by using the back control, continued the engagement and shot down one of the planes in flames. With his assistance the pilot brought the machine back to our lines.

Capt. JOHN FARQUHAR GORDON (Gord. Highrs.).
An exceptionally able leader, who has carried out thirty-one bombing raids and twenty photographic reconnaissances. Many of these flights were of great distance and carried out at a very high altitude, calling for great courage and stamina. This officer possesses these qualities in a marked degree, and his example has been of the greatest service to his squadron.

Sec Lt. (temp. Lt.) ROBERT MACINTYRE GORDON (Sea Patrol).
In three months this brilliant young pilot has destroyed or driven down eight enemy machines. On all occasions he displays remarkable gallantry and dash, never hesitating to fly to the assistance of other pilots when they are in difficulties. In one combat his action saved his flight commander.

Lt. JOHN GOULD-TAYLOR (Australian Flying Corps).
On the 28th August, when on reconnaissance, this officer was attacked by five Fokker biplanes; with characteristic boldness and skill he drove them off, shooting down one out of control. He then continued reconnaissance, sending down calls on three hostile batteries (which were neutralised), six parties of transport and two trains. During recent operations this officer has rendered most valuable service in sending down calls, displaying keenness of observation and great power of endurance. While on this duty he never hesitates to attack the enemy as opportunity occurs.

Lt. GAVIN LYNEDOCH GRAHAM.
A bold and gallant officer, whose success in attacking troops and transport with bombs and machine-guns has been marked. He has also proved himself a skilful fighter in the air, having destroyed eight enemy machines and driven down two others out of control.

Lt. WILLIAM EDRINGTON GRAY (Sea Patrol).
Since May last this officer has destroyed three enemy machines and has taken part in five low-bombing raids He is a most efficient officer, possessing great presence of mind, and invariably displaying cool courage in difficult situations. On a recent occasion he led a formation of 40 machines to bomb an aerodrome; this was most successfully accomplished, and was largely due to Lt. Gray's able and skilful leadership.

Lt. ARTHUR EDWARD GRIGSON (Australian Flying Corps).
A very gallant and resolute officer who has crashed four enemy aircraft. On the 1st of August, while observing for one of our batteries, he saw an enemy aeroplane that had brought down four of our balloons; he at once dived from 4,000 to 200 feet and engaged it; in the combat the enemy machine crashed.

Lt. VICTOR EMMANUEL GROOM.
An officer of great courage and dash who never hesitates to attack the enemy regardless of the superiority in numbers While on a recent patrol this officer was one of a formation of eight that engaged twenty-five hostile scouts. Lt. Groom shot down one, and his observer (Lt. Hardcastle) a few minutes later destroyed another. On a later date, accompanied by the same observer, they were attacked by twelve scouts; two of these they shot down

Lt ERNEST HARDCASTLE.
This officer displayed great courage and skill on two occasions when he was observer in company with Lt. Groom While on patrol their formation of eight attacked twenty-five hostile scouts; he and Lt. Groom accounted for two. On another occasion, when with the same officer, they were attacked by twelve scouts, two of these they shot down.

Lt. EDWARD DELTA HARDING.
This officer shows exceptional keenness and determination in carrying out long-distance night raids. On many occasions it has been mainly due to his ability and skill as an observer and navigator that the objectives have been reached. He is an officer of high merit.

Lt. (temp. Capt.) TOM FALCON HAZELL, M.C.
This officer is conspicuous for his bravery and skill, having destroyed twenty enemy machines and four kite balloons. On one occasion while attacking troops on the ground, he observed seven enemy scouts above him: he at once engaged them. shooting down one out of control. Some days later he, with another pilot, attacked a kite balloon, driving it down in flames, they then attacked a second balloon, driving it down in a deflated condition.
(The award of a Bar to the D.F.C. is also announced in this "Gazette"; M.C. gazetted July 26th, 1918.)

Lt. (temp. Capt. REGINALD STACEY HELLIER (S. Lanc. R.).
On the 8th August, whilst on contact patrol, Capt. Hellier found great difficulty in determining our line by means of flares; consequently he descended to a low altitude, and, after a prolonged patrol, he brought back detailed information as to the position of the enemy. During the operation he was subjected to heavy rifle and machine-gun fire, and it was mainly due to this fire that he was able to locate the enemy. A fine performance, which necessitated the exercise of high courage and determination, qualities in which this officer excels.

Sec. Lt. (Hon. Lt.) NORMAN WILLIAM HELWIG (C. Ontario R.).
This officer has taken part in 38 bomb raids, 12 photographic flights, and 19 reconnaissances. In all these his success has been marked, due to his keen power of observation and intense devotion to duty. He has on several occasions been specially commended by the Army Intelligence Staff for his good photographic work and useful reconnaissance reports.

Lt. (temp. Capt.) ALFRED STEWART HEMMING.
A courageous and dashing officer, whether engaging hostile aeroplanes in the air or attacking enemy troops, transport, etc., on the ground. He has accounted for eight enemy machines—three destroyed and five driven down out of control. During recent operations his boldness in engaging enemy troops was noteworthy and deserving of high praise.

Lt. (temp. Capt.) JAMES EDMUND HIBBERT, M.C. (S. Lanc. R.)
This officer shows a magnificent example of courage and devotion to duty. During recent operations he engaged with his machine-gun a company of enemy infantry that was holding up our front line, pressing his attack with such effect that the enemy was forced to retire under cover. On another occasion, when on patrol, his machine was hit by our barrage, and he was forced to land in front of our advanced troops. He salved valuable portions of his machine and regained our lines with valuable information.
(M.C. gazetted June 3rd, 1916; 1st Bar, Dec. 20th, 1916; 2nd Bar, June 22nd, 1918.)

Lt. (temp. Capt.) WILLIAM CARROLL HILBORN.
An excellent patrol leader, who on all occasions displays courage, endurance and skill. He has accounted for six enemy aircraft.

Lt. PHILIP TERENCE HOLLIGAN.
This officer has taken part in 50 bomb raids and photographic reconnaissances, and has rendered valuable and gallant service. During the battle of the Marne his reports regarding enemy movements, positions of batteries and troops were exceptionally full and accurate and were of the greatest value.

Lt. WILL HUBBARD.
A bold and determined fighter in the air and against troops on the ground. On Aug. 26th he engaged three enemy two-seaters, shooting down one out of control. Owing to his pressure pump being shot away in the combat he reached our lines with great difficulty, landing only 150 yards west of our front line. Undisturbed by the fact that the machine was under direct observation and subjected to heavy fire he removed all the instruments and pegged the machine down before leaving. In all he has accounted for five enemy aeroplanes.

Lt. (temp. Capt.) JOHN ELLIS LANGFORD HUNTER, D.S.C. (Sea Patrol).
A fine fighting pilot and flight leader. On Sept. 12th, whilst leading his formation on escort duty, he engaged nine Fokker biplanes. He destroyed two and drove a third down out of control. In this combat he was severely wounded in the leg.
(D.S.C. gazetted Nov. 30th, 1917.)

Lt. WILLIAM GEORGE HURRELL.
This officer has taken part in 61 flights. On 20 of these he has been the leader's observer, and the success of the operations has been largely due to his confidence and courage. Reconnaissance reports by this officer have proved most accurate, and the information he has obtained has been of great value His work generally is characterised by marked skill and determination

Sec. Lt. (hon. Lt.) ROBERT KIRK INCHES (R.E.)
A gallant and skilful observer in long-distance bombing raids, in 31 of which he has been engaged in addition to 13 successful reconnaissances. Lt. Inches, who has since been killed, has always shown the greatest determination in carrying out his dangerous duties, flying very low in order to ensure that his bombs dropped on the targets—enemy railway junctions, aerodromes, etc.

Lt. (temp. Capt.) HAROLD MERVYN IRELAND
On Aug. 29th this officer was leader of a large formation detailed for a long distance bombing raid on certain enemy docks. A strong and adverse wind was blowing and thick clouds almost obscured the ground, rendering the task of reaching such a distant objective one of great difficulty. Carefully studying the compass and making what he considered due allowance for the wind he led his formation to a point which he judged would be in the vicinity of the objective. A break in the clouds showed that he was correct, and the docks were effectually bombed During the five months Capt. Ireland has been with his present squadron he has had 43 long-distance raids, and the foregoing is only one instance of many in which he has shown judgment, skill and determination of a very exceptional nature.

Lt. (temp Capt.) WILLIAM ROY IRWIN.
This officer is a fine leader, displaying tactical skill and personal gallantry. On Aug. 10th he led his flight down to attack 15 Fokkers. In the engagement that ensued he showed brilliant leadership and personal courage, accounting for two machines himself He has destroyed five enemy aeroplanes and brought down three out of control.

Lt. Mansell Richard James.
An excellent scout pilot who has at all times shown great skill, courage and determination in attacking enemy machines. During a short period of time he has destroyed nine enemy aeroplanes.

Lt. Arthur Eyguem de Montaigne Jarvis (E. Ontario R.).
A bold and determined fighter. On July 26th he engaged and shot down an enemy machine, which was seen to crash. Later on the same date he attacked a hostile two-seater and forced it to land near our lines; both occupants were taken prisoners.

Lt (temp. Capt.) Victor Frederick Jaynes.
This officer has carried out 31 solo reconnaissances and 41 bombing raids. The majority of these have been at great distances over the lines, necessitating flights of three and a half hours to four hours' duration. He rendered exceptionally good service on a recent important photographic recognaissance, taking 22 successful exposures and obtaining much valuable information. This reconnaissance duty demands energy, endurance and skill, in which qualities Capt. Jaynes excels.

Lt. (temp. Capt.) Thomas Gordon Jefferies (R.F.A.).
During the recent fighting this officer has been conspicuous for his gallantry on many occasions, notably on Aug. 24th, when, seeing a body of some 600 hostile infantry and limbers advancing west, he immediately engaged them, diving and firing his front gun at 1,500 feet. Subjected to very heavy field and machine-gun fire, he pressed home his attack with vigour, and at 1,000 feet dropped his six bombs on the infantry, who dispersed in all directions. His observer then opened fire, which completely disorganised the enemy. At this period of the combat Capt. Jefferies was wounded in the calf, and, although his leg was completely numbed, he brought his machine back to his aerodrome and handed in his report.

Sec. Lt. William Stanley Jenkins, Sea Patrol
An intrepid pilot who has met with much success in numerous battles. On one day last month he led three machines in an attack on seven of the enemy. He engaged in combat with four separate enemy machines, set fire to one at a height of 14,000 feet, and then, getting on the tail of another, fired 150 rounds into it, resulting in complete destruction. Lt. Jenkins has, on previous occasions, destroyed or brought down out of control six enemy aircraft.

Lt. (temp. Capt.) Lionel Herbert Jones.
This officer is a most expert artillery observer, and carries out his shoots with remarkable speed and accuracy Determined to carry out his allotted task, neither adverse weather conditions nor heavy hostile fire daunts him. He affords a striking example to his squadron of what can be accomplished in face of great difficulties by courage and resolute will, combined with judgment and skill.

Lt Edward Haines Johnson.
This officer has taken part in 76 bombing raids and 22 photographic reconnaissances. He is a keen and able aviator who never shirks responsibility. On a recent bombing raid several machines, owing to most unfavourable weather conditions, were compelled to return. Lt. Johnson at once took the lead, and, collecting the remaining machines, he led them over the objective, which was effectively bombed.

Lt. (temp. Capt.) Edgar Charles Johnson.
A brilliant and most dashing leader who greatly distinguished himself on the 4th of September. Leading his flight of four machines (including his own), he saw a patrol of fourteen Fokkers Undaunted by the disparity in numbers, he, without hesitation, engaged and completely defeated them. He shot down one machine in flames himself, and three others were driven down out of control. Continuing his patrol, he shortly afterwards saw a second formation of eight Fokkers. His machine was badly shot about and much of his ammunition expended, but this did not deter him from at once attacking them. In this engagement three Fokkers were accounted for, one of which he himself shot down, thus making a total of seven enemy machines disposed of by his flight of four in one morning. A very fine performance, reflecting the greatest credit on all engaged.

Lt. (temp. Capt.) Charles Lev King, M.C.
This officer has done excellent work both on reconnaissance duty and in co-operation with our artillery. In the latter service he shows remarkable skill and keen observation. In carrying out a shoot on Aug. 31st 848 rounds were fired in five and a-half hours, and four pits were destroyed—a fine performance, reflecting great credit on this officer's capability.
(M.C. gazetted Sept. 16th, 1918.)

Lt. Harold Albert Kullberg.
This officer has destroyed six enemy aeroplanes and has taken part in seven engagements when others have been destroyed by members of his patrol. A bold and keen officer who possesses a fine fighting spirit.

Lt. ((temp. Capt.) Camille Henri Raoul Lagesse.
When on wireless interception duty Capt. Lagesse, in company with another officer, was attacked by seven scouts. Engaging one, he followed it down from 11,000 ft. to 2,000 ft., when it crashed Bold in attack, skilful in execution, he has proved himself on many occasions to be a fine aviator.

Capt. Herbert Joseph Larkin.
In the recent fighting this officer has led 12 offensive patrols, and these patrols have destroyed 21 enemy machines and driven down 4 out of control. The success of his squadron is due not only to his most able leadership, but also to the fine fighting spirit he inspires by his personal courage and disregard of danger,

Lt. (temp. Capt.) Alfred Alexander Leitch, M.C
This officer has already been awarded the Military Cross for gallant service. His devotion to duty and consistent courage is an inspiring example to all. During the recent operations he heavily bombed an enemy dump, causing several fires; he then attacked hostile troops in the vicinity. Frequently he has returned to our lines with his machine riddled with bullets.
(M.C. gazetted Sept. 16th, 1918.)

Lt. Harry Fearnley Longbottom.
On the morning of Aug. 21st this officer was detailed to gain contact with our advanced cavalry. Owing to a dense midst he was compelled to fly at a very low altitude—200 ft.—and he was subjected to heavy machine-gun fire. He, however, achieved his object, and, continuing his patrol, he was, in the afternoon, able to render to the Cavalry Divisional Headquarters a most valuable and accurate report, with full details as to the position of our troops and that of the enemy. His machine was badly shot about, and he was wounded in the face, but with praiseworthy devotion he continued his patrol until wounded in the knee; he then turned home and landed just west of our lines in a state of collapse. His is a fine example of endurance and courageous determination.

Lt. Walter Hunt Longton, A.F.C.
On Aug. 22nd this officer led his formation of six machines to attack an equal number of enemy scouts. All the latter were accounted for, four being crashed and the remaining two driven down out of control. A brilliant performance, reflecting the greatest credit on this officer as leader, and all who took part in this engagement. During the last seven weeks Lt Longton has destroyed seven enemy machines.
(A.F.C. gazetted June 3rd, 1918.)

Lt (temp. Capt.) Frederick Ives Lord.
A gallant officer, bold in attack and skilful in manœuvre. On the 27th June he, single-handed, attacked and destroyed a Fokker biplane. On his return journey he observed one of our formations engaged with a number of Pfalz scouts; joining in the combat he shot down one which crashed.

Lt. Emile John Lussier.
During recent operations this officer has driven down out of control or destroyed seven enemy machines, and, with the aid of two other pilots, has accounted for a further two. Three of these he destroyed in one day. In these combats he has proved himself an officer of very high courage, eager to attack without regard to the enemy's superiority in numbers.

Maj. Wilfred Ashton McCloughry, M.C. (Australian Flying Corps).
The squadron commanded by this officer has been remarkably active and successful in attacks at low altitudes on trains, transports, billets and low-flying machines; this success is largely due to his inspiring personality, fine leadership, and the boldness in attack he invariably displays. One evening he bombed a train, which was compelled to stop; he then attacked it with machine-gun fire at 200 feet altitude. Afterwards he engaged a two-seater machine, which unfortunately escaped owing to failures in both his machine-guns. Having remedied these, he attacked a party of infantry, which he dispersed, several casualties being noted.
(M.C. gazetted July 18th, 1917.)

Lt. William Myron Macdonald.
A very gallant and determined officer, who never hesitates to attack the enemy however superior in numbers the latter may be. On a recent occasion he engaged, single-handed, five scouts, destroying two, both of which crashed. In all he has accounted for seven machines.

Lt. (temp. Capt.) Malcolm Charles McGregor.
On the 22nd August this officer displayed great gallantry and skill in an engagement between six of our scouts and a similar number of the enemy; all the latter were accounted for, Capt. McGregor driving down one out of control. In all he has seven enemy aircraft to his credit—four destroyed and three driven down out of control.

Sec. Lt. (temp. Lt.) Hamish Duncan McLaren (Sea Patrol).
Has been engaged in thirty-six bombing raids, the majority being on enemy docks and shipping, and has always displayed courage, determination and ability in carrying out his duties. He has succeeded in these raids, notwithstanding the intense anti-aircraft fire which is invariably encountered, as well as enemy aeroplanes numerically superior.

Lt. Robert McLaughlin.
On the morning of 8th August this officer successfully bombed enemy transport and engaged three machine-gun sections, killing and scattering these detachments. Later on, while bombing a dump he was attacked by eight Fokkers, who shot him down in flames. Except for slight burns he escaped injury, and, returning to his squadron, he was once more flying in the afternoon, having specially requested to be allowed to do so. A splendid example of courage and determination.

Lt. John McMillan MacLennan.
During the recent operations this officer has rendered brilliant service and set a most inspiring example. In one attack his petrol tank was shot through and his machine was badly damaged; he nevertheless continued his offensive against troops on a main road, inflicting many casualties.

Lt. Arthur William Macnamara.
His photographic reconnaissance during the last few months has been exceptionally good. Frequently, when on this duty, he has been attacked by hostile planes, but has invariably completed his work before returning. On one occasion, when 10,000 yards over the line, he was attacked by superior numbers. By skilful manœuvring he drove them off and continued his photographic work, exposing 126 plates, despite the fact that his machine was badly shot about.

Lt.-Col. William Foster MacNeece, D.S.O. (R.W. Kent R.).
An exceptionally brave and efficient officer. From 2nd July to 9th August he was in command of a Balloon Wing, and by his energy and personal example inspired all ranks with a spirit of emulation difficult to surpass. During this period he carried out numerous shoots in co-operation with our artillery, and obtained much valuable information for our Intelligence Department. On 9th August his balloon was attacked by an aeroplane and shot down in flames. Lt.-Col. MacNeece parachuted, but received severe injuries when landing.
(D.S.O. gazetted 1st January, 1917.)

Lt. William Ewen Macpherson.
This officer has taken part in fifty-two bombing raids and carried out twenty photographic reconnaissances. The following is only one instance of the dogged resolution and cool courage invariably displayed by Lt. Macpherson. When on a photographic reconnaissance he was attacked by seven Fokkers. The engagement was prolonged and fierce, and twice he was compelled to retire from the area; but, returning a third time, he succeeded in driving off the enemy, and he then completed his reconnaissance, obtaining seventy-two photographs. His machine was riddled with bullets, and he and his observer returned utterly exhausted.

Lt. Keith Douglas Marshall.
A very skilful, gallant, and determined air fighter, who has been engaged in twenty-seven successful bombing operations since the 1st of May, 1918. Lt. Marshall was the leader of a formation recently detailed to attack an enemy aerodrome, which resulted in the destruction of three enemy machines and eight hangars; no casualties were sustained by his party. This officer was engaged a few days later in a combined attack on a great enemy war factory. Just as the bombs were falling an enemy formation of fifteen machines appeared, and Lt. Marshall, as leader, turned quickly in their direction, which disconcerted the enemy so completely that they at once scattered and were unable to reform. During the progress of this bombing expedition thirty-two enemy machines were encountered.

Lt. Charles Midgley Maud.
A bold scout pilot, who possesses in a high degree the true fighting spirit. He has shot down seven enemy machines

Lt. Norman William Reginald Mawle (Lond. R.).
A courageous and skilful leader, who has destroyed nine enemy machines and four kite balloons. While leading his patrol of five scouts he observed a hostile formation of fifteen scouts. Nothing daunted by the disparity in numbers, he at once engaged them, driving down three himself. During a recent patrol he engaged two

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kite balloons, one of which he shot down in flames at 25 feet altitude. Later, he attacked an anti-tank gun, stampeding the horses and causing the gun to overturn in a ditch. In this patrol he was seriously wounded, but flew his machine back to his aerodrome.

Lt. Douglas William Mackintosh Miller.

Between the 19th of May and the 26th of July this officer carried out ten photographic reconnaissances, frequently at very low altitudes, and on each occasion his machine was damaged by enemy machine-gun fire; the photographs obtained were most excellent. In addition to this, Lt. Miller has rendered most valuable service on contact patrols. Often compelled to fly at very low altitudes owing to smoke barrage and other reasons, his machine frequently suffered damage, but in spite of all difficulties he, with marked perseverance and courage, was most successful in locating our troops.

Lt. Edward Stanley Morgan.

On the 16th August this officer took part in a bomb raid on enemy docks—a well-guarded objective. The weather conditions were most unfavourable. A strong wind compelled the machines to move slowly and high white clouds made them an easy target for anti-aircraft fire. On nearing the objective the Flight Leader was shot down, and Lt. Morgan assumed command. He was met by an intense barrage. A second machine was seen to fall, and the pilot of a third was severely wounded, but Lt. Morgan, persisting in his attack, reached and successfully bombed the objective. The cool determination and gallantry displayed by this officer deserves high praise.

Lt. Claud Louis Morley.

On 10th August this officer saw that a party of our cavalry charging down a road were being fired at by two machine-guns. Diving to within a few feet of the ground, he engaged one of the guns, silencing it. This is only one of the many acts of gallantry performed by this officer, who displays entire disregard of personal danger.

Lt. (temp. Capt.) Ernest Thomas Morrow.

On the 22nd August, whilst leading an offensive patrol, this officer attacked ten Fokker biplanes and Pfalz scouts, driving down one in flames. In the engagement he was wounded, and became unconscious; regaining consciousness, he found that his machine had got into a spin and was on fire. With a supreme effort, although very weak, he succeeded in landing within our lines, where he was with great difficulty extricated from the burning machine. A bold and determined officer, who has destroyed four enemy aeroplanes and driven down two out of control.

Lt. (temp. Capt.) Harry Munden (Som. L.I.).

On 8th August, when on cavalry contact patrol, this officer flew at 500 ft. altitude for two and a half hours endeavouring to establish the exact locality of our troops. During this time he was subjected to intense machine-gun fire, and was, moreover, attacked by formations of four and nine Fokkers, and later by thirty scouts. Most gallantly he engaged these, but finding the odds too great, he retired. As soon as the hostile machines had left him he returned to continue his patrol, although his machine was riddled with bullets. No difficulties damp this officer's keenness and perseverance.

Lt. Thomas Walter Nash (Sea Patrol).

After four months' excellent service as a pilot the officer was appointed Flight Commander. His brilliant leadership has fully justified his selection. On a recent patrol his formation accounted for six enemy 'planes, he himself destroying two. We suffered no casualties, mainly owing to the skill and judgment displayed by Lt. Nash.

Lt. George Oakley Newton.

During recent operations this officer has displayed conspicuous courage in attacking enemy troops and transport in the face of intense hostile fire. No difficulties daunt him, and he can always be relied upon to carry out the task allotted him.

Lt. (temp. Capt.) Allen Robert Nock, Sea Patrol (R. War. R.).

Has been engaged in twenty bombing raids during a period of three months, and has met with great success in night attacks on enemy aerodromes and docks.

Lt. James Henry O'Connell.

This officer has been ballooning continuously for two years, and his flying time amounts to about 600 hours. On several occasions his balloon has been subjected to severe shell fire, but he has invariably carried on his observation work, calm and collected, thereby setting a fine example to other observers, notably on a recent occasion, when his balloon, under heavy fire from a long-range gun, was eventually so badly hit that it commenced to fall. Lt. O'Connell continued to give observations until he was forced to descend in a parachute.

Lt. William John Pace.

Since this officer joined his squadron in March last he has carried out five photographic reconnaissances and taken part in 32 bombing raids. His work has been distinguished throughout by keenness, efficiency and determination. When attacked by hostile 'planes he has invariably shown coolness and initiative, never hesitating to assist weaker pilots in critical situations. On photographic reconnaissances he has rendered most valuable service.

Maj. Lawrence Arthur Pattinson, M.C. (R. Fus.).

This officer is not only a capable and most efficient squadron commander, but also an exceptionally fine leader of bombing formations. On Sept. 7th he led a combined formation of 22 machines; they were attacked by some 30 aircraft, who made the most determined effort to prevent our formation reaching their objective. By skilful leadership and manœuvring Maj. Pattinson repulsed the attack and dispersed the enemy formation. Leading well over the target excellent results were obtained. (M.C. gazetted June 3rd, 1918.)

Lt. William James Peace.

On the night previous to one of our attacks this officer was detailed for a very important duty, which entailed the patrol of a section of our lines. The weather conditions were most adverse, but after two attempts this officer started in dense clouds and rain. Flying by compass he reached his objective, and for three hours patrolled the line. A very fine performance, calling for high courage and perseverance, in face of the difficulties due to weather conditions.

Lt. Alan MacMillan Phillips (Sea Patrol).

A very gallant pilot, who displays great determination. During the past month he attacked, with one other machine, 10 enemy seaplanes, and destroyed one of them, making four in all, since joining his present squadron in June, 1918. On numerous occasions he has descended to very low altitudes to bomb enemy shipping, and on four occasions he obtained direct hits. Recently he set out to attack a strongly defended enemy post, and, notwithstanding fierce firing from anti-aircraft guns, he set fire to a block of sheds and an enemy coastal motor-boat.

Lt. (temp. Capt.) Harry Puckle (Leic. R.).

This officer was detailed to lead a reconnaissance patrol of three machines to take photographs of a certain area, an escort of fighting machines being told off as escort. While waiting for the escort the weather became threatening. Knowing that the photographs were urgently required, Capt. Puckle decided to proceed without the escort. Hostile aircraft was particularly active that day, and the three machines were repeatedly attacked, but in face of strong opposition this officer persevered in his duty and succeeded in taking the photographs required. This is but one example of the intrepid leadership and disregard of danger invariably displayed by this officer.

Sec. Lt. Francis James Ralph.

A brave and skilful observer who has taken part in many combats with enemy aircraft, invariably displaying cool courage and presence of mind. On a recent occasion our patrol of 11 machines, after bombing a railway junction, was attacked by 15 enemy scouts. One of these, which was engaged by this officer's pilot, crumpled and fell. The formation was then attacked by seven Fokkers from above, one of which was shot down by Sec. Lt. Ralph.

Capt. Arthur Clunie Randall.

A daring and skilful aviator who during recent operations has accounted for six enemy machines. He is conspicuous for his determination and devotion to duty.

Lt. Arthur Eden Reed.

On a recent occasion, when on wireless interception duty, this officer attacked two Albatros two-seaters, both of which were destroyed. Lt. Reed shooting down one and his observer the other. On another occasion he attacked two enemy machines, destroying one; the second fled. A bold and skilful aviator.

Temp. Capt. George Thomas Reid (Can. Forestry C.).

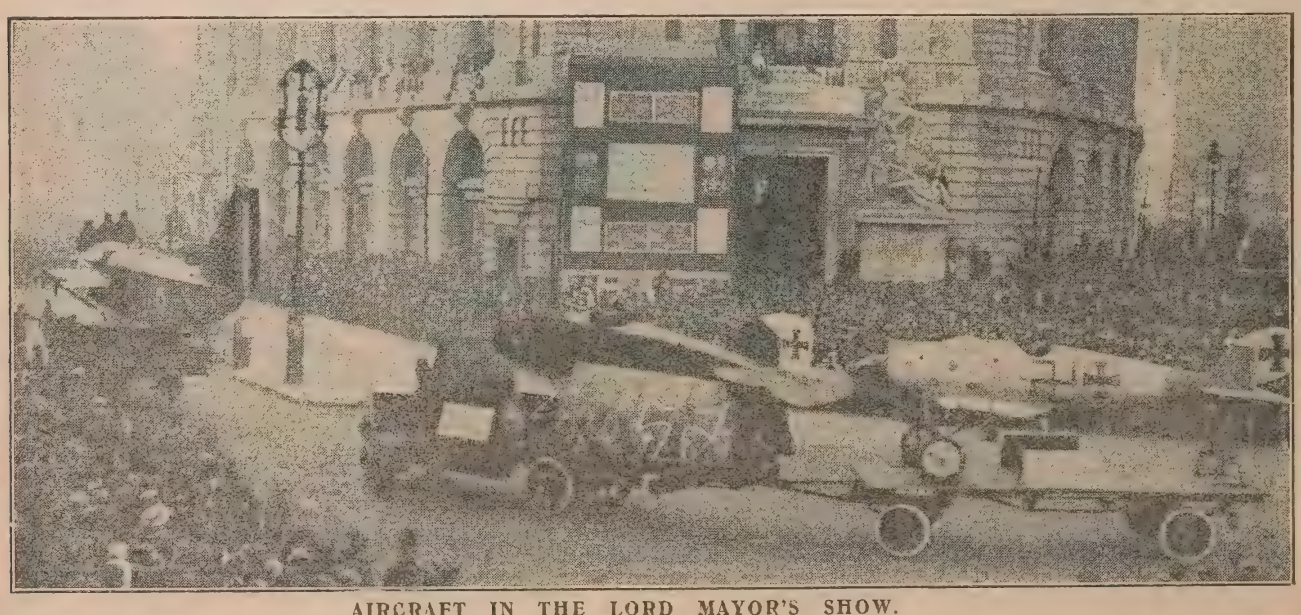
A very competent and gallant observer in long-distance bombing raids, in 13 of which he has been successfully engaged. Capt. Reid displays great skill in selecting the correct altitude for unloading his bombs, and his determination is most marked in all his work.

Lt. Alan Rice-Oxley (Shrops. L.I.).

In company with another machine this officer attacked an enemy formation of 15 aeroplanes, and promptly destroyed two of them. He then repeatedly attacked the remaining 13 machines, which were crowding on his companion, and the battle ended in the destruction of six of the enemy and one driven down out of control. Two days afterwards he destroyed two more enemy aircraft. The gallantry displayed by this officer, and that of his companion, Capt. C. E. Howell, in attacking 15 machines, was of the very highest order.

Capt. Leonard Henry Rochford, D.S.C.

This officer has already been awarded the Distinguished Service Cross and Bar for gallantry and devotion to duty—qualities in which he excels. Since the award he has accounted for 12 enemy aircraft—six destroyed and six driven down out of control. (D.S.C. gazetted April 26th, 1918; Bar gazetted June 7th, 1918.)



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Lt. Thomas Rose.
This officer has accounted for nine enemy machines during recent operations. Possessing in a marked degree the real offensive spirit, he sets a notable example to the other pilots of his squadron by his utter disregard of personal danger.

Lt. (temp. Capt.) Charles Ross.
Since October last this officer has carried out 240 hours' service flying, mainly on long solo photographic reconnaissances at very low altitudes. In this arduous and trying service he has shown exceptional skill, perseverance and courage, notably on one very important reconnaissance, when he was attacked by 10 enemy aeroplanes. Engaging one at close range, this officer shot it down in flames, and in face of the hostile attack he completed the reconnaissance.

Lt. Charles Gordon Ross.
A bold and skilful aviator who has, during the last few months, accounted for four enemy machines. On Aug 8th, when on offensive patrol, he engaged a two-seater, driving it down. On his return journey he saw a hostile balloon, which he destroyed, the observer escaping in his parachute.

Lt. Edward Fearnley Rowntree (Aus. F.C.).
Between Aug. 8th and 11th this officer carried out six contact patrols at very low altitudes and in face of heavy machine-gun fire. No difficulty deters this officer from accomplishing his task. On Aug. 11th, while subjected to heavy machine-gun fire, he flew for an hour and a half over a certain area and eventually established the position of our line; this was the more difficult owing to the low visibility at the time.

Lt. (temp. Capt.) Benjamin Roxburgh-Smith.
This officer has shot down six enemy aeroplanes during the last few months. Bold in attack, skilful in defence, he is a valuable aviator.

Lt. Horace William Russell.
This officer displayed remarkable gallantry on Aug. 11th. Being on a low patrol he saw that our advancing troops were held up by a nest of six machine-guns. These he engaged with his own machine-gun, repeatedly diving so low as almost to touch the ground, and eventually silencing the hostile guns, thus enabling our troops to occupy the position. Having expended all his ammunition he returned to his aerodrome, and, obtaining another machine (his own being almost shot to pieces) he again joined the attack. A brilliant and most gallant performance.

Lt. (temp. Capt.) Hugh William Lumsden Saunders, M.C., M.M.
An officer of exceptional courage, who, since he was awarded the M.C., has destroyed five enemy aircraft and shot down two balloons in flames. While on patrol he observed a formation of seven hostile scouts below him. Diving to attack he engaged the leader and firing short bursts at close range shot him down nose foremost; the remainder of the formation scattered in all directions. (M.C. gazetted Sept. 16th, 1918.)

Lt. (temp. Capt.) George John Scaramanga (N. Staffs. R.).
During recent operations this officer has rendered most brilliant service on numerous contact patrols, and the information he has brought in has materially contributed to the success of our operations On Aug. 23rd the situation in a certain area was very obscure; this officer carried out a patrol lasting two and a half hours, and, flying at a very low altitude, he drew the enemy's fire and so located their troops. Proceeding up and down the line he was enabled to render a very valuable and accurate report of the situation. His machine was badly shot about, having 44 bullet holes. Later in the same day, on another contact patrol, which lasted two hours, he saw two enemy howitzers drawn by eight horses, in retreat, diving to 50 ft. he fired 200 rounds, killing six horses and sixteen men; the rear howitzer was left behind in a ditch. On another occasion when on contact patrol, lasting two and a half hours, he was attacked by three formations of four, six, and seven hostile aircraft respectively at different times; all these he drove off and completed his patrol.

Lt. Thomas Robertson Scott.
The work of this officer in co-operation with our artillery and in contact patrols is of a very high standard. In the latter duty his services have been exceptionally valuable, notably on a recent occasion when his prompt action in signalling the enemy's advance materially contributed to the defeat of the counter-attack.

Lt. (temp. Capt.) Wilfred Selwyn.
On Aug. 8th this officer engaged some 300 enemy troops; having inflicted heavy casualties by bombing he pressed home his attack with machine-gun fire until he himself was shot down. Two days later, leading a patrol of three, he observed an enemy two-seater escorted by eight scouts approaching an area where our troops were assembling for an attack; without hesitation he attacked the two-seater, and, despite the efforts of the scouts to protect it, shot it down. A courageous officer with cool judgment, he has destroyed three machines and driven down three others out of control.

Lt. Frank Alyn Sewell (Aus. F.C.)
Lt. Sewell has proved himself a cool and courageous officer on many occasions. He has destroyed three enemy machines. On Aug. 11th he rendered conspicuous service; flying for two hours under 200 ft. altitude he established the locality of our line by actual recognition of our troops, bringing back a most valuable report. During the whole time he was subjected to heavy hostile machine-gun fire

Lt. William Ernest Shields.
A gallant officer who inspires others by his courage and dash. In six weeks he destroyed six enemy aircraft and drove down three others out of control. On one occasion he, single-handed, engaged three scouts, driving down two of them.

Lt. Walter Carl Simon.
This officer has carried out sixteen successful reconnaissances, many at long distances, and frequently strongly opposed by hostile aircraft. In this service Lt. Simon has shown great ability and determination, rendering excellent reports and obtaining much valuable information. In the encounters with hostile aircraft he has proved himself a gallant and skilful fighter.

Sec. Lt. Edward Arthur Simpson.
On their return from a bombing raid the formation, with which this officer was serving as an observer, was attacked by twenty-five to thirty Fokkers. In the running fight that ensued, Sec. Lt. Simpson, with marked coolness and judgment, shot down two machines in flames and caused two more to crash. He has displayed gallantry and courage in many bomb raids, and he rendered exceptional service during the Marne operations.

Lt. Charles John Sims (Sea Patrol).
In a recent raid on an aerodrome this officer at 200 ft. altitude bombed the objective, obtaining a direct hit; he then descended to about 50 ft. altitude and attacked some Fokker biplanes lined up outside the hangars. He is an officer of exceptional courage and ability, possessing remarkable powers of observation.

Lt. Austin Edward Smith (Dorset R.).
This officer has rendered valuable and gallant service in carrying out shoots in co-operation with our artillery, and on reconnaissance duty. He is a most steady and reliable pilot, and his unfailing perseverance has largely contributed to the success of the many shoots in which he has taken part.

Lt. James Lee Smith (Aus. F.C.).
This officer has shown conspicuous bravery in attacking enemy kite balloons and in carrying out reconnaissances of very low altitudes. While on a recent patrol far over the enemy's lines he observed a kite balloon, he at once attacked it at low altitude. While thus engaged, he was himself attacked by an enemy machine; this he drove off, and he then completed his patrol, obtaining valuable information of enemy back areas.

Lt. (temp. Capt.) Walter Alfred Southey
A gallant and skilful officer. On Aug. 9th, observing a large body of enemy troops and artillery on a road, he descended to 50 ft. and bombed them, causing heavy casualties; he then engaged them with machine-gun fire, inflicting further loss and scattering them in all directions. He displays great courage in the air, having accounted for seven enemy aircraft.

Lt. Arthur Rowe Spurling.
On his return from a recent bombing raid, this officer was separated from his formation owing to clouds. After flying for some twenty minutes, and thinking that he was over our lines, he came down to find his position, seeing an aerodrome, he was preparing to land when, at 2,000 ft., a Fokker biplane attacked his machine; Lt. Spurling then observed some 30 machines of the same type heavily camouflaged; with great gallantry he dived through the centre of the formation, shooting down one machine in flames; two others were seen to be in a spin, one of which crashed. Five of them then closed on his machine, but by skilful manœuvring Lt. Spurling enabled his observer to shoot down two of these in flames. The three remaining aircraft broke off the combat and disappeared in the mist. A fine performance, reflecting the greatest credit on this officer and his observer.

Capt. Charles Ronald Steele (York R.).
A bold and skilful leader who inspires confidence in those who serve with him. On Aug. 13th, while leading an offensive patrol of five machines, he observed six enemy scouts; attacking these he shot down one out of control, his observer driving down a second. In this engagement he became separated from his patrol; seeing this, eight scouts dived to attack him; one of these his observer shot down out of control. Eventually he rejoined his patrol and led them back to the aerodrome. In all he has destroyed three enemy machines and driven down four others out of control.

Lt. (temp. Capt.) William Gordon Stevenson.
A fine leader, who has taken part in 26 successful raids, displaying marked skill and gallantry, notably on July 7th, when with five other machines he carried out a successful raid. On the return journey the formation was engaged by 10 hostile aircraft, who made repeated and determined attacks; that these attacks were repulsed without loss was largely due to the cool judgment and strong initiative shown by this officer.

Lt. (temp. Capt.) David Arthur Stewart, M.C.
An able leader, conspicuous for initiative and dash. He has destroyed three enemy machines, and has, in addition, taken part in numerous bombing raids, reconnaissances and photographic flights. In the majority of these he has been leader, and frequently in order to obtain accurate information he has led his flight at very low altitudes. (M.C. gazetted April 22nd, 1918; Bar to M.C., June 22nd, 1918.)

Lt. James Alexander Stewart.
A gallant and very capable pilot, who has been engaged in 13 successful night bombing long-distance raids. He has never failed to achieve his object under the most trying weather conditions. He displays excellent judgment as to correct altitude from which bombs should be dropped, and consequently has invariably hit his objectives.

Lt. Malcolm Gilbert Watson Stewart.
This officer rendered most valuable service in co-operation with our artillery during the operations between Aug. 8th and 14th, notably on the latter date, when, engaged in observing for a battery, he saw a party of the enemy evacuating their trenches; diving, he attacked them with bombs and machine-gun fire, inflicting many casualties.

Lt.-Col. Louis Arbon Strange, M.C (Dorset R.).
To this officer must be given the main credit of the complete success attained in two recent bombing raids on important enemy aerodromes In organising these raids his careful attention to detail and well-thought-out plans were most creditable. During the operations themselves his gallantry in attack and fine leadership inspired all those taking part. (M.C. gazetted March 27th, 1916.)

Lt. Alan Victor Stupart.
A courageous and resolute officer, who displayed great gallantry on a recent patrol when he was attacked by seven hostile aircraft; with skill and courage he drove these off and continued his patrol. Later on he was again attacked by a large formation; in this engagement both he and his observer were wounded, but they continued the combat until they eventually drove off the enemy. Having brought back his machine, Lt. Stupart fainted from loss of blood.

Lt. Edwin Swale (Sea Patrol).
A successful and skilful pilot who has destroyed three enemy machines and one kite balloon, and has, in addition, driven down four aeroplanes out of control. On Sept. 15th he attacked one of five Fokker biplanes; this machine was driven down out of control, and on attempting to land crashed.

Lt. (temp. Capt.) John Romilly Swanston (Sea Patrol).
A very capable flight commander. On a day last month he led a formation of 20 machines on a low bombing raid on an enemy aerodrome, and by skilful management succeeded in effecting a complete surprise, which resulted in great damage being done. Capt. Swanston has carried out 22 valuable reconnaissance flights over the line, has personally obtained a direct hit on an enemy aerodrome, set fire to a railway truck containing enemy anti-aircraft guns, destroyed two enemy aeroplanes, and helped to destroy another. During his three periods of employment on active service he has been in the air 310 hours.

Sec. Lt. Bryan Samuel William Taylor.
A gallant and skilful observer who has been engaged in 19 successful bombing raids during the past five months. During one of these raids eight of our machines were attacked by 20 enemy aircraft on the return journey, and during the course of the close fighting (which had become somewhat confused) Lt. Taylor destroyed an enemy aeroplane just at the moment when matters were critical for our formation, which resulted in affairs being straightened out immediately to our advantage. Lt. Taylor has always distinguished himself by the efficient manner in which he has carried out any operation allotted him, notably in the various long-distance raids

Capt. Edmund Roger Tempest, M.C.
Since March last this officer has destroyed nine enemy machines. A daring and most capable officer, who never hesitates to engage the

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enemy. By brilliant leadership he achieves success with the minimum of loss. (M.C. gazetted May 13th, 1918.)

Lt. (temp. Capt.) Samuel Frederick Henry Thompson, M.C. (A.S.C.).
This officer has carried out numerous offensive patrols, displaying the most marked bravery and determination. His boldness in attack and utter disregard of personal danger affords a most inspiring example to his brother pilots. Since June last he has destroyed 11 enemy aeroplanes. (M.C. gazetted Sept. 16th, 1918.)

Sec. Lt. (Hon. Lt.) Graham Noble Thomson (High. L.I.).
This officer has rendered most excellent service with his squadron, especially during the March offensive, displaying at all times exceptional gallantry and devotion to duty. On a recent date, although he was on a light duty owing to ill-health, he volunteered for two patrols; owing to a heavy thunderstorm and adverse weather conditions he was compelled to fly at very low altitudes, and his machine was badly shot about. Despite these difficulties he obtained most valuable information, correct in every detail. (The announcement of a Bar to the D.F.C. is also contained in this "Gazette.")

Lt. William McKenzie Thomson, M.C.
This officer has destroyed 13 enemy machines, invariably displaying courage, determination and skill. Disparity in numbers never daunts him. On a recent occasion, in company with eight other machines, his formation was attacked by 25 scouts; he shot one down. On another occasion his formation of 10 machines engaged between 20 and 30 Fokkers; in the combat that ensued this officer shot down one out of the four that were destroyed. (M.C. gazetted Sept. 16th, 1918.)

Lt. (temp. Capt.) Adrian James Boswell Tonks (Sea Patrol).
A brave and determined aviator who has destroyed four enemy aeroplanes and driven down six out of control. In a recent engagement with 12 enemy scouts he destroyed one and drove off others who were attacking some pilots in his flight. In these combats he expended all his ammunition, but seeing three enemy machines attacking one of ours, he, with great gallantry, dived amongst them with a view to distracting their attention. In this he succeeded. A courageous and meritorious action.

Capt. Francis McDougal Charlewood Turner, M.C.
While leading a formation of 10 machines on a bombing raid this officer was attacked by 20 Fokker biplanes. In face of this strong attack he led his formation down to 1,000 ft., and two sheds were set on fire and billets were riddled with machine-gun fire; three enemy machines were also accounted for, Capt. Turner himself crashing one. The success of this raid was mainly due to the brilliant and daring leadership of this officer. (M.C. gazetted Sept. 26th, 1917.)

Sec. Lt. (temp. Lt.) Ronald William Turner (York. R.).
A skilful and determined observer who in recent operations has shot down six enemy machines, accounting for two Albatros scouts in one flight.

Lt. Arthur Whitehair Vigers, M.C. (R.E.).
A gallant and skilful aviator. During the recent operations whilst leading a formation of eight machines he saw a group of 12 Fokker biplanes; without hesitation he attacked them, and, in the engagement, crashed two and shot down another out of control. Since June last he has crashed three enemy aeroplanes and driven down three out of control. (M.C. gazetted Jan. 14th, 1916.)

Sec. Lt. Eric Walker.
This officer has taken part in 35 bombing raids, 10 photographic flights, and 21 reconnaissances, many at low altitudes. He is a most efficient and keen observer who has rendered as such most valuable service. Moreover, he is a bold and determined fighter when attacked, and has accounted for four enemy machines.

Lt. (temp. Capt.) Frank Roy Walker (Middx. R.).
An officer of untiring energy. In whatever task allotted, whether reconnaissance, attack on enemy troops, creating smoke screens or co-operating with our artillery, this officer displays a bold determination and devotion to duty worthy of very high praise.

Lt. (temp. Capt.) William Walker.
On Aug. 9th accurate information as to the whereabouts of our cavalry patrols was urgently required; Capt. Walker undertook to obtain this. After patrolling for three hours at a very low altitude, subjected to intense machine-gun fire, he brought back the requisite information. This officer had already completed two previous reconnaissances that day, and on the day before he had flown for six and a-half hours engaging enemy aeroplanes and troops. A striking example of courage, endurance and devotion to duty.

Lt. (temp. Capt.) Hazel Le Roy Wallace.
A gallant and most capable leader, who in many engagements has displayed marked ability and courage, notably in a recent attack on an aerodrome when he led his flight against the group of hangars allotted to him at an altitude of between 100 to 200 ft. By direct hits he destroyed three enemy aeroplanes and set fire to a hangar by machine-gun fire. In addition to above this officer has destroyed four aeroplanes and driven three down out of control.

Lt. Henry Charles Wilcox Walters.
Has carried out many successful reconnaissances of the enemy's positions and has brought back very valuable information. Lt. Walters destroyed two enemy machines in air fighting a short time ago, and always displays a fine example of courage and devotion to duty.

Lt. Wilfred Beckwith Ward.
During the recent operations this officer has shown great enterprise and initiative in observing from kite balloons the fire of our artillery, and his services have been of the greatest value. Whilst on this duty Lt. Ward's balloon has been shot down on three occasions; displaying remarkable coolness and courage he has at once ascended in a fresh balloon and completed his task.

Lt. Edward George Kinton Weakley.
On Aug. 8th this officer attacked an enemy machine-gun which was in action against our infantry and tanks. Early in the combat he was severely wounded in the leg; he nevertheless continued his attack and eventually silenced the gun. He then flew back to his aerodrome, where on landing he collapsed. His persistence in continuing the attack after he had been so severely wounded stamps him as an officer of great courage, possessing a very high sense of devotion to duty.

Lt. Robert Kenneth Whitney (60 Sqn.).
Bold in attack, skilful in manœuvres, this officer sets a fine example to his whole squadron. Since July 6th he has destroyed four enemy aeroplanes.

Lt. Ernest John Whyte.
A very gallant pilot, who has been engaged in 44 successful operations since Nov. 3rd, 1917, in seven of which he was leader, and in eleven cases deputy leader. Lt. Whyte has always displayed the utmost courage and remarkable determination in his work. Physically he is weak, but notwithstanding this heavy disadvantage nothing deters him.

Lt. (temp. Capt.) Thomas Melling Williams, M.C.
During recent operations this officer rendered most gallant and valuable service, proving himself to be a very capable and inspiring leader. On one occasion, observing three enemy railway trains, he dived, and in face of very heavy machine-gun fire seriously damaged one by a direct hit with a bomb. He then descended almost to the ground, and attacked the personnel escaping from the ruined train, scattering them in all directions. On returning to his aerodrome his machine was found to be riddled with bullets. (M.C. gazetted Sept. 16th, 1918.)

Lt. (temp. Capt.) Frank Beamish Wilson.
On Aug. 9th Capt. Wilson observed that the enemy were bringing up reinforcements in lorries to meet a French attack. Descending to a low altitude, he dropped bombs, and, causing considerable damage, he stopped their advance. He then attacked with machine-gun fire the troops descending from the lorries. By this prompt action Capt. Wilson rendered very valuable service.

Sec. Lt. (temp. Lt.) Frederick Charles Wilton.
A fine fighting aviator, who has destroyed six enemy aeroplanes and driven down another out of control. He has taken part in a number of long-distance bombing raids, and is conspicuous for his determination to reach the objective as well as for his skill in successfully bombing the same.

Capt. Lionel Mostyn Woodhouse, M.C. (Essex Yeo.).
This officer displayed great gallantry during a heavy counter-attack by the enemy. Flying at 100 ft., he engaged the advancing troops, causing heavy casualties. His bold action contributed materially to the failure of this counter-attack. Having rendered this service, he continued his patrol, in which he was subjected to heavy fire and his machine was badly shot about. (M.C. gazetted Aug. 25th, 1917.)

Lt. (Hon. Capt.) Archibald Buchanan Yuille (E. Lancs. R.).
One night during the recent operations when on patrol this officer observed an enemy aeroplane in the beams of a searchlight. Three of our "Camels" were engaging this machine, but not at sufficiently close range for decisive results. With great gallantry he dived between the nearest "Camel" and the enemy, thereby exposing himself to the fire of our tracers, and by skilful manœuvre succeeded in getting under the tail of the enemy machine, where he opened fire at twenty-five yards. After three bursts the enemy machine caught fire and crashed. A fine performance, deserving the highest praise.

Capt. Geoffrey Sebastian Buck, M.C. (Lond. R.).

Sec. Lt. Arthur Kenneth Barter.
Capt. Buck, with Sec. Lt. Barter as observer, was pilot of one of two machines detailed to bomb an important railway junction. Owing to most unfavourable weather conditions the other machine returned, but Capt. Buck persevered, reached the objective, and made a most successful attack in face of intense anti-aircraft fire with numerous searchlights. On the return journey they were much hampered by a severe thunderstorm, which lasted for three-quarters of an hour, the machine being out of control owing to the lightning. In this critical situation Capt. Buck remained cool and collected, and, displaying marked skill and judgment, succeeded in landing his machine safely. The success of this raid was largely due to the skill and efficiency displayed by Sec. Lt. Barter, who most ably co-operated with Capt. Buck. During the past month these officers have carried out 16 night bombing raids in a manner reflecting the greatest credit on them both. (Capt. Buck's M.C. gazetted Aug. 25th, 1918.)

Sec. Lt. Thomas Archibald Dickinson.

Sec. Lt. Norman Frederick Frome.
These two officers performed most excellent service on a recent occasion. Flying at a very low altitude, they bombed a couple of bridges, and then attacked large bodies of the enemy on the roads and in a town. While thus engaged they were attacked by four enemy machines, which were driven off. Fire was then opened on them from two machine-guns. Descending to a still lower altitude, the observer, Sec. Lt. Frome, engaged these guns and drove off the detachments. Sec. Lt. Dickinson, the pilot, then returned over the lines, and despite the fact that his machine had been badly shot about and his petrol tanks empty, landed in safety. The height throughout this flight was never more than 400 ft. The coolness, courage and skill displayed by these two officers is deserving of the highest praise, and it is the more creditable as they had had no previous experience of active service flying.

Lt. (temp. Capt.) Richard John Gammon.

Sec. Lt. Percival Ewart Appleby.
Capt. Gammon, with Sec. Lt. Appleby as observer, was the leader of two formations (ten machines in all) on a recent raid. En route the formation was attacked by 15 hostile aircraft; having driven these off, they reached the objective, which was successfully bombed. While thus engaged the formation was fiercely attacked by 15 enemy machines, which continued the attack for some distance on the return journey, until they were driven off. Upon nearing our lines the formation was again assailed by seven machines: in the engagement that ensued one of these was destroyed and two driven down by Capt. Gammon, and his observer, and, in addition, three others were destroyed by our other machines. The officer who led the whole of the combined formation of this raid speaks in the highest terms of Capt. Gammon's leadership and skilful co-operation. Sec. Lt. Appleby was of the greatest assistance to Capt. Gammon throughout, keeping him informed of the movements and manœuvres of the hostile machines. This officer has taken part in numerous raids, displaying on all occasions great keenness and determination.

Lt. (temp. Capt.) Norman Goudie.

Sec. Lt. Robert McKinley Jamison (R. Ir. Rif.).
Thrice on one day these officers carried out at extremely low altitudes and in face of intense rifle and machine-gun fire reconnaissances of an important road. During one of these reconnaissances, observing a party of the enemy holding our infantry, they dived on them and forced them to retire, and on another occasion they bombed a large party of the enemy, causing them to surrender to our infantry.

Lt. (temp. Capt.) John Stevenson Stubbs (S. Lancs. R.).

Sec. Lt. John Bernard Russell.
Capt. Stubbs is a fine leader and a skilful tactician, who during the last few months, has led 51 reconnaissances and raids over enemy lines with marked success, frequently extricating his formation, when attacked by large numbers of scouts, by his coolness and judgment. One evening this officer, with Lt. Russell as observer, in company with another machine, encountered 10 enemy aeroplanes. Regardless of their superiority in numbers, he at once attacked and shot down one. By skilful manœuvring he enabled his observer to bring down another; the remainder of the enemy were driven down to their lines; he then completed his reconnaissance and returned home. Leaving the other machine behind, he again crossed the enemy lines; he bombed a train and attacked some mechanical transport at 1,500 ft. altitude. This particular exploit is highly creditable to both these

(*Continued on page 1824.*)



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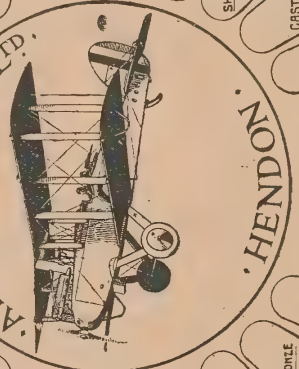
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BORE, STROKE—AND OTHER THINGS.

BY C. SYLVESTER.

Author of "The Design and Construction of Internal Combustion Engines," etc., etc.

Concerning Engineers.

Aeronautical engineering may be truly said to be in its infancy. This being so, it may be reasonably presumed, as is the case with all branches of engineering, that all classes of engineers have adopted this new phase of engineering.

By "all classes of engineers" it may be said to mean: those who know, others who think they know, and a very few who would like to know. The first named we look upon as a valuable asset to the country. The second we give up as a bad job, but hope they will not retard the progress of the first. And of the third, it is quite reasonable to predict that they will eventually join the ranks of the first or second.

A Definition.

An engineer has been very aptly defined as a man who can do for one pound what any fool can do for two pounds. Or, speaking from a production point of view, a man who can produce two aero-engines in the same amount of time that a fool takes to produce one. The truth of this saying can be, and is, proved every day—hence the engineer.

Lawyers also have an old adage which has been proved times out of number. This is to the effect that "anyone who is his own lawyer has a fool for a client."

Both the description of the engineer and the adage of the lawyer are based upon common sense, for, to describe common sense, it may be said that it is merely reason working in harmony with fact.

Reasoning without facts is as bad as taking the proverbial pitcher to the well to obtain water, the result being equally disastrous. Ignoring facts, for instance, in the design of an aero-engine is very apt to be both sad and expensive. It is knowing the facts, and how to make use of them, that enables the engineer to live up to his variable reputation.

A Fool's Paradise.

Yet we very often hear silly questions asked as the engineer and the would-be engineer are discussing a new design of aero-engine. We often hear the old, old question, "What is the bore and stroke?" Upon being told, the would-be engineer wags his head, looks wise, and conveys the impression to one that an exceptional amount of information has been given to him. Yet it is a fact that the knowledge gained does not have any true relation to the object of asking the question.

Concerning Bore and Stroke.

Although the bore and stroke of an engine are important features of its design, it cannot be said that the maximum h.p. depends upon its bore and stroke. Other factors play a very important part in the alteration and production of h.p., such as the compression ratio, the overlap of valve timing, and even the advance of ignition timing.

Thus it is that engines which have been designed for a certain h.p. have eventually had their power increased—in some cases by as much as 20 per cent., without any alteration to the bore and stroke. It may be that the original design has been faulty. If this is so, then it is another case of the would-be engineer.

Limiting Features.

It is a very risky proposition to increase the power of an engine unless it has been definitely ascertained that the mechanical strength of both moving and stationary parts will stand the additional stresses. When referring to the stationary parts of a modern aero-engine, one may safely ignore the combustion chamber. This, as a rule, is on the liberal side as far as material is concerned.

The same cannot be said of steel cylinder liners, where, in almost every case, the safety limits have been approached so closely in the original design that further stresses, side or otherwise, may be dangerous.

This is more so the case in an engine of a certain much-boomed type, where the whole of the power developed by the engine is transmitted to the base through the cylinder liners, and not through studs from the combustion chamber to the base. It is true that overhead cam-boxes have a tendency to stiffen up the whole of the cylinders, but it cannot be denied that the additional side thrusts are excessive because the pressure on the piston is increased.

Probably the most important item, however, is the connecting rod. Here, if the safety limits have been closely approximated in the original design, it is only courting disaster to submit them to additional stresses. This has been proved in more than one type of engine.

Difficulties of Ascertaining Power.

It is extremely difficult to ascertain correctly the exact amount of power which may be developed by any particular cylinder at any

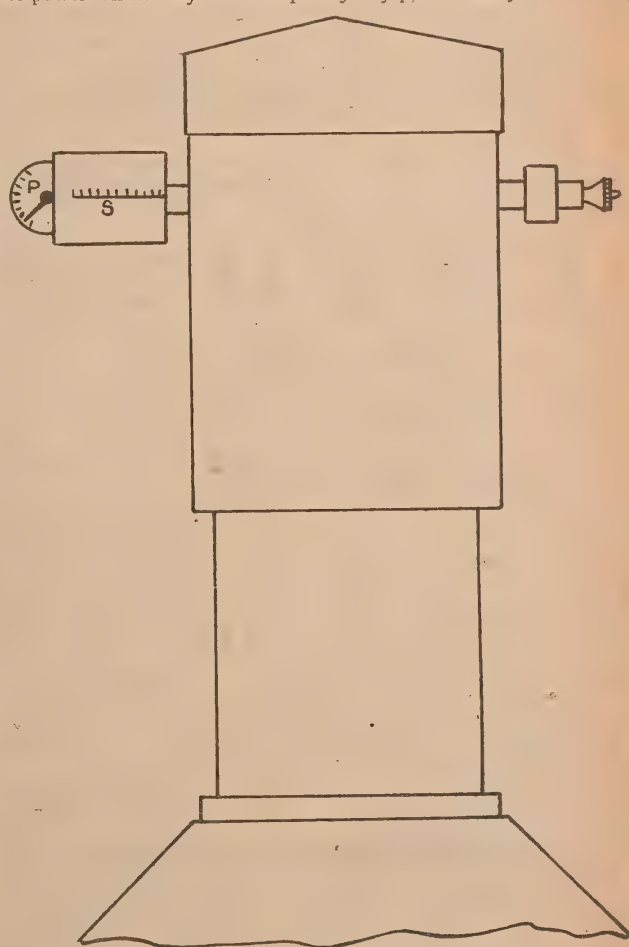


Fig. 1.

moment. As a matter of fact, in cases where a single system of ignition is used, no idea at all can be obtained, unless the engine is coupled up to a brake, when any fluctuation in the amount of weight lifted would be observed.

With a double ignition system the matter is simplified to a certain extent by using what is known as a compression indicator. Even with the use of this instrument, only approximate powers may be obtained.

The Compression Indicator.

A brief description of the compression indicator will probably interest those readers who have not seen this instrument. It can only be used to obtain the air compression in single ignition cylinders, unless a second plug-hole is screwed in the second valve-cap, but in double ignition cylinders both the air compression and the peak combustion pressure may be approximately obtained. But even then it is only the peak pressure with one plug firing.

Fig. 1 illustrates a cylinder designed for double ignition. Here, one plug has been removed and a compression indicator has been fitted in its stead. To obtain the air compression of the second stroke of a four-cycle engine it is necessary to disconnect the ignition lead of the remaining plug.

Compression indicators are usually designed to indicate pressures from 20 to 400 lbs. The adjustment is made by turning the body of the indicator round, in one direction or the other, until the pointer, P, is just lifting. The graduations on the scale, S, indicate the pressure in pounds required to move the pointer, one complete turn indicating 10 lbs.

The action of turning the indicator in one direction or the other merely increases or decreases the tension of a spring upon a valve; the stem of this valve actuates P, which operates upon a fulcrum.

Importance of Indicator Diagrams.

Looking at the compression indicator from a practical standpoint, it cannot be considered satisfactory from an efficiency point of view. Yet, considering that an indicator for taking power diagrams is not used in connection with aero-engines, the compression indicator may be looked upon as the best means at our disposal.

This is to be regretted, although one thinks that there should be no difficulty in designing an indicator to enable diagrams to be taken from aero-engines. Helical gearing for rotating the diagram drum could easily be fixed to the brake coupling. Thus we would have a reliable means of ascertaining power readings.

As the matter stands, with the use of a compression indicator, it can only be assumed that a torque curve something like that illustrated in Fig. 2 can be the result.

In this diagram A-B may be said also to represent both air compression and the peak of combustion pressure. B-C illustrates the working and exhaust stroke. The base line represents the atmospheric pressure, and the vertical lines power. It is at the peak of B that the pointer on the indicator would vibrate. It will be observed that the end of the exhaust stroke is slightly above the atmospheric line. This is due to the back pressure of the exhaust which exists until the suction stroke is commenced.

The Indicator Diagram.

As a comparison between the efficiency of the compression indicator and the indicator diagram, one considers that it will not be time wasted if a brief description of the indicator and diagram is considered. The indicator, which is really a small working

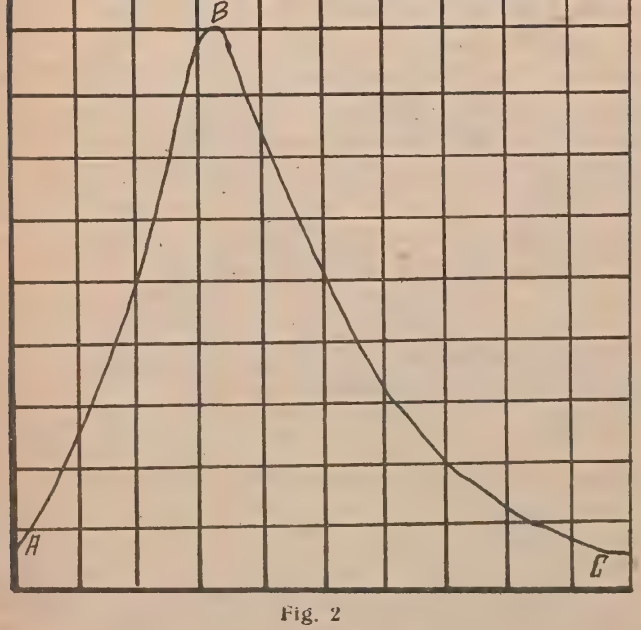


Fig. 2

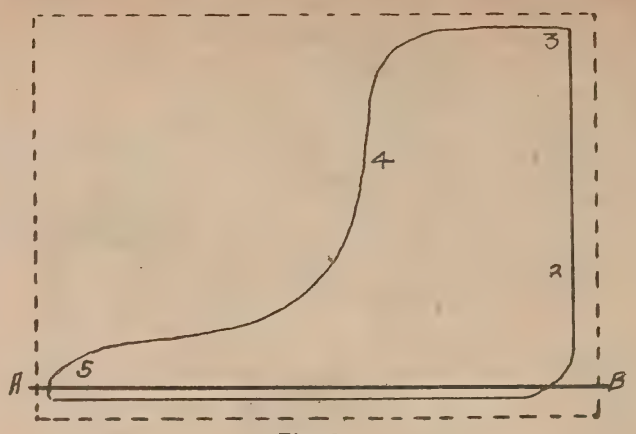


Fig. 3.

cylinder, is placed in communication with the cylinder to be tested. The indicator cylinder is fitted with a small piston to the rod of which a small pencil is attached. This pencil traces a faint line upon a sheet of paper, the paper being fixed to the indicator drum. The drum is rotated to synchronise with the action of the crank, a cord being fixed between the drum and crank (or other auxiliary apparatus) for this purpose.

The indicator piston is held in position with the aid of a spring, the elasticity of which is accurately known. A cock is fitted between the indicator and the cylinder to enable the pressure to be removed from the indicator when changing the sheets. If there is no pressure upon the indicator, it follows that if the drum is rotated a straight line will be marked upon the sheet. In all the tests this may be said to be the true atmospheric line.

We will now presume that the cock is opened. The indicator piston will now commence to follow the movements of the piston in the cylinder under test. Here the range of motion will, of course, depend upon the amount of pressure inside the cylinder. At the same time the pencil will faithfully record the movement of the piston by tracing a line above and below the atmospheric line on the sheet.

Aero-Engine Diagram.

An exaggerated form of diagram, such as would be obtained from an aero-engine, is illustrated in Fig. 3. The diagram is exaggerated in order that it may be more clearly explained.

In this diagram the atmospheric line is indicated by A-B. The suction stroke is shown between the points 1-2. Here it will be noticed that the whole length of the line is drawn below the atmospheric line. This is readily understood when it is taken into consideration that the suction creates a partial vacuum which is subsequently filled with air by the force of atmospheric pressure.

Air compression is shown from the atmospheric line to point 2. At this point the piston is almost on top dead centre, when ignition takes place. The pressure immediately rises to point 3, the piston now being exactly on top dead centre.

3-4 indicates the working stroke; at point 4 the exhaust valves commence to open. 4-5 indicates the exhaust stroke, the back pressure at 5 being maintained until the piston commences the suction stroke which brings the pressure below atmospheric pressure again.

Diagram Calculations.

Having obtained a good diagram through good tuning, etc., the mean effective pressure is obtained by calculation from the diagram. There are instruments for doing this mechanically, but for ordinary calculation it is sufficient to divide the diagram into equally spaced vertical lines, usually 10.

The pressure shown in each section is then calculated by multiplying the length in inches, measured in the centres of each division, by the scale of the spring used in the indicator. These are then added together, and the result, divided by 10, will give the mean effective pressure in pounds per square inch. The explosion pressure is, of course, determined by the length of B-3.

If a piston ring breaks, or should there be a loss of power through any other reason, the height of 2-3 will be considerably decreased. Similarly, leakage through the inlet valves, or blowing past the exhaust valves, will be easily detected.

Bore and Stroke Comparisons.

Considerable difference of opinion appears to exist in designing circles concerning the relationship of bore, stroke, and speed. As an example we will consider an American and British engine of well-known makes.

American: Bore 102 mm. Stroke 140 mm. Speed 2,600 r.p.m.
Number of cylinders, 8; h.p. 140.

British: Bore 90 mm. Stroke 150 mm. Speed 2,000 r.p.m.
Number of cylinders, 8; h.p. 150.

Here it will be seen that, taking bore, stroke, and speed into consideration, the British engine is by far away the better engine

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of the two. Yet the eccentricities of British designers is very remarkable. This is proved by taking the bore and stroke, etc., of two engines, both of which are designed and constructed by the same manufacturers. The details of one engine are :—

H.P.—170.
Bore—110 mm.
Stroke—160 mm.
Speed—2,100 r.p.m.
Number of cylinders—8.

The other engine details are :—

H.P.—300.
Bore—110 mm.
Stroke—135 mm.
Speed—2,100 r.p.m.
Number of cylinders—12.

Here it will be seen that the bore of the two engines are the same. A comparison of the stroke of the respective engines will make it clear that the latter engine is a much better designed engine of the two. For instance, taking the first engine, a 12-cylinder engine of the same bore and stroke should produce 255 h.p. The latter engine, although of much less stroke and the same bore, produces 300 h.p., or about 20 per cent. more power.

German Engines.

A brief comparison of some of the German engines go to show that our enemies have still a great deal to learn concerning engine design. Taking two of the Mercédès engines, their bore, stroke, and speed are as follows :—

162 h.p. Mercédès.
Bore 140 mm. Stroke 160 mm. Speed 1,400 r.p.m.
Number of cylinders, 6.

240 h.p. Mercédès.

The bore and stroke is the same as that of the 162 h.p. engine. There is a difference in the speed, however, that of the 240 h.p. being 1,330 r.p.m. as against 1,400 r.p.m. There are eight cylinders.

160 h.p. Benz.
Bore 130 mm. Stroke 180 mm. Speed 1,400 r.p.m.
Number of cylinders, 6.

300 h.p. Maybach.
Bore 165 mm. Stroke 180 mm. Speed 1,400 r.p.m.
Number of cylinders, 6.

From the above details it is apparent that the Germans favour slow engine speeds, although this cannot be said to be a serious drawback. Taking everything into consideration, there is room for considerable improvement in the design of our own engines. That these improvements will be carried out there is not the slightest doubt. It is to be hoped, however, that we do not make the same mistake that the Germans have made—that is, over-standardising their engines. Standardisation will mean the end to competition, and this in turn can only lead to one thing—inefficiency.

SOME AERONAUTICAL FALLACIES.

By Afraes.

5.—That Direct Driven Screws are Suitable for all Aeroplanes.

I notice that one or two correspondents have rather suggested that I have gone out of my way to discover fallacies so as to expose them; but, in the present instance, I make no doubt that here is a genuine case of a commonly held fallacy, which can, if necessary, be supported by concrete examples.

It is the more difficult to account for the popularity of this fallacy, inasmuch as the comprehension of the conditions calls for very little technical knowledge, and, as it is now proposed to show, the proposition can be set out in quite simple language.

First of all, we must start with certain premises, which are two in number.

(1) That the petrol engine depends for its power upon r.p.m., and that the normal crankshaft revolutions are from 1,400—1,800.

(2) That for maximum efficiency the relation between the pitch and diameter of a screw is a fixed ratio.

In regard to the latter it is, perhaps, necessary to point out that the efficiency of a screw is a function of its advance per revolution. From this it immediately follows that the screw reaches its maximum efficiency when the aeroplane is travelling at its fastest, in short, when it is flying "all out" on the level.

In these circumstances, it will be perceived that the angle of incidence between the screw blade and its helical path is small, and, consequently, that the Lift/Drag ratio is at its maximum.

If, however, the forward speed of the aeroplane is reduced by its being set to climb, and, at the same time, the throttle is kept full open, then it follows that the angle of incidence of the blade is increased.

This, in turn, leads, firstly, to a diminution in the Lift/Drag ratio, followed by a falling off in thrust; and, secondly, to an increase in blade resistance, which has the immediate effect of reducing the speed of the engine; and, in consequence, the power delivered to the screw.

If the aeroplane stands still on the ground and the engine is run, the airscrew efficiency is obviously nil. In fact, it ceases to be a airscrew, and merely becomes a fan.

Realising that Pitch/Diameter ratio is constant, let us imagine a screw of 6 ft. pitch being driven by an engine making 1,500 r.p.m. It is at once obvious that when the aeroplane is travelling forward at 9,000 ft. per min., or 150 ft. per second, the efficiency of the screw would be 100 per cent.

This figure is, needless to say, impossible of attainment in practice; but, at all events, something a little in excess of 80 per cent. is practicable.

In proportion as the forward speed of the aeroplane is lessened, so does the screw efficiency fall off. Such a screw will thus be desirable for a machine, the speed of which is somewhere in the neighbourhood of 80 per cent. of 150 ft. per sec, equal to 120 ft. per sec.

The power required will, of course, depend upon the area of the aeroplane, *ceteris paribus*, and the machine will reach this practically optimum speed, providing that 80 per cent. of the engine-power is sufficient to deal with the resistance at this speed.

Now, let us suppose that we desire this imaginary aeroplane to perform tolerably not only in point of maximum speed, but also in point of climb. To do this, it is necessary to make a compromise.

Since on the climb the forward speed is reduced, and, in consequence, the engine r.p.m. are slowed down, it is clear that in order to keep the latter up, and, at the same time, get the best Lift/Drag ratio for the screw blades, the pitch must be reduced. But, it must be remembered, that if we do this we shall lose efficiency at high forward speeds, since we have now departed from the optimum Pitch/Diameter ratio.

Within very small limits this may not be a serious disadvantage, always provided that we get a satisfactory compromise between good speed performance and good climb performance, and for general flying purposes it may pay us to lose a little on the swings so as to pick up a bit more on the roundabouts.

Let us now project another aeroplane of the weight-carrying type, in which we propose to use the same engine.

Since the new machine is necessarily slower than the first, it follows that if the same screw is used the propulsion efficiency will suffer a big drop all round; and, in fact, that the forward speed of the aeroplane can never reach that point at which the screw does its best work. Again, since the speed and climb will be low the efficiency will also fall in this department.

Unless we are prepared to gear the screw down, we are faced with the necessity of again departing, and this time to a serious extent, from the best Pitch/Diameter ratio, and we may even find that the efficiency has now fallen so much that the thrust horse-power available is insufficient to drive the aeroplane at all.

It is evident from the initial premises, and also from what has developed from them, that for high-speed aeroplanes high-speed screws are essential; and, on the other hand, that for low-speed aeroplanes low-speed screws are demanded.

If the engine r.p.m. are to be regarded, as they must be, as more or less fixed, then it follows that the gear reduction between crankshaft and screw must vary inversely with the speed of the machine, i.e., the lower the speed the greater must the reduction be. Power plants suitable for scouts cannot, therefore, be equally suitable for bombers, and *vice versa*.

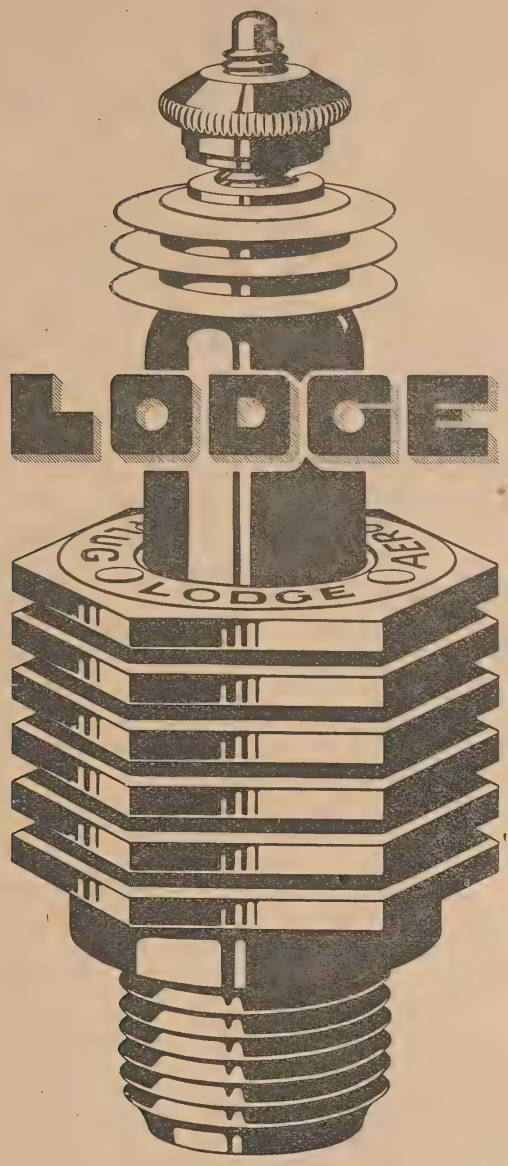
It may be within the memory of many that the Wright Bros.' biplane flew successfully when rival machines, possibly better from the aerodynamic standpoint and equipped with possibly lighter and more powerful engines, resolutely refused to soar into the empyrean.

The designers of the many failures utterly failed to realise the necessity for reasonable screw efficiency and persisted in using direct driven screws which grossly outraged the Pitch/Diameter rule. In their desire to get higher maximum speed they neglected to provide sufficient thrust power to get their machines into the air.

Wilbur and Orville Wright were much more sensible; they realised that their machine was a slow one, and that slow-speed airscrews were called for.

I recollect that at the time one or two wiseacres said, and some even committed the opinion to print, that big diameter screws are *ipso facto* more efficient than smaller ones. This is not true, inasmuch as the deciding factor is the speed of the machine. The power plants of some of those earlier failures might fly a Camel quite respectably, but it is very doubtful whether the Wright equipment would get it off the ground.

Here, then, is the prime case for the slow-speed screw, but it has other advantages of which one, at least, deserves mention. This is, that, owing to its low r.p.m. the stresses to which it is



THE ACE OF PLUGS.

KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

subjected are considerably lessened, and it can thus be made out of material which would be unsuitable for the more highly stressed high-speed screw.

On the other hand, I believe I have seen in print that, according to someone or other, geared engines, such as low-speed screws demand, are bad, from the mechanical point of view.

In my humble opinion, this sort of statement, which is made by no means infrequently, should be rebutted on every possible occasion, inasmuch as it is utterly false. No one in his senses would use a gear on a fly-wheel-less four-cylinder engine, because that would simply be asking for trouble, and, at all events, would involve so much weight that any possible aerodynamic advantages might be completely nullified.

But the proposition is very different in a 12, or more, cylinder engine, in which the torque is making some sort of approach to constancy, and in which, in consequence, the gears are working under quite easy conditions.

One may not prophesy these days with impunity, but I have no hesitation in committing myself to this very firm opinion, that the engine of the commercial aeroplane of the future that is concerned with the carrying of weight will most certainly be geared. The managers of aeroplane lines will not fail to see that high efficiency in the screw means high profits, firstly, in reducing the weight of the power plant of the machine, and, secondly, in reducing the consumption of petrol. One can be sure that if 75 per cent. all round propulsive efficiency be obtainable, they will not be satisfied with a miserable 50 per cent.

I hate vulgarity, but I have always felt that putting high-speed screws into big, slow aeroplanes was just about analogous to trying to help an Atlantic Liner along by spitting over the stern.

TO FACILITATE OUTPUT.

Necessity brought about the Cambridge Microscope Lathe-Attachment. It was evident that gauges for screw-cutting which should ensure accuracy in the threads, and, at the same time, facilitate rapid production, were needed to ensure the production of perfect and interchangeable screw-threads. Therefore, the Cambridge Scientific Instrument Co., Ltd., gave great attention to the development of gauges, and have produced a lathe attachment (Fig. 1) that will permit of the exact setting of the tool and the checking of its angle much more conveniently and accurately than any of the ordinary methods at present employed, which has the additional advantage of enabling the tool and work to be closely watched.

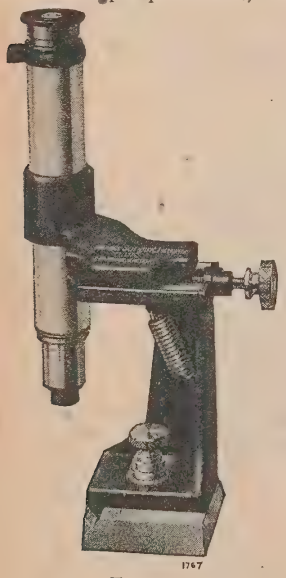


Fig. 1.

The attachment consists of a compound microscope fitted with an eye-piece that is capable of being focussed on a diaphragm ruled with fine lines representing the thread-angle of the tool to be used, and another line equally inclined to both of these.

The outline of the tool is shown in Fig. 2 as it appears in relation to the gauge angle. When the cross line is set parallel with the axis of the cylinder to be threaded, the angular position for the tool is then accurately indicated, and it only remains to set the tool to coincide with this angle to ensure its being correctly located in relation to the work.

The standard diaphragm is engraved with a 55 deg. angle, but diaphragms with other angles can also be supplied.

With this attachment, any error is shown multiplied at least twenty times, and minute deviations of the tool from the true angle or from its correct relation to the work are clearly indicated.

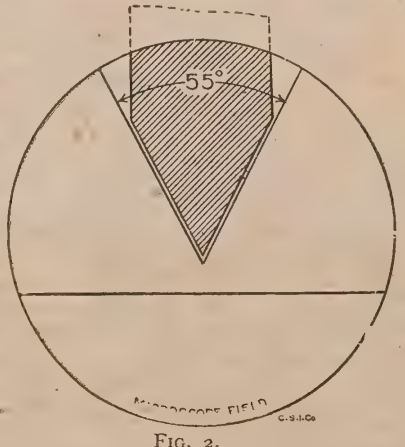


Fig. 2.

By using this attachment, the inaccuracy of tool setting should not exceed 0 deg. 3 min.

This firm has also produced an alignment tester. With this instrument, it is claimed, it is possible to ensure the correct alignment of machine-tool beds within close limits. The construction is simple, but the instrument is reliable and easy to use. Two small castings KK (Fig. 3) are rigidly bolted to the ends of the machine-bed it is required to test. These castings carry supports SS for a fine wire which is stretched down the length of the bed. In plan, the wire is a straight line which can be accurately adjusted by means of the screws B. This wire is viewed through the microscope M, which is mounted on a bracket fitting geometrically on the machine-bed. The microscope is fitted with a micrometer eye-piece, one division of the micrometer scale corresponding to 1/2000 in.

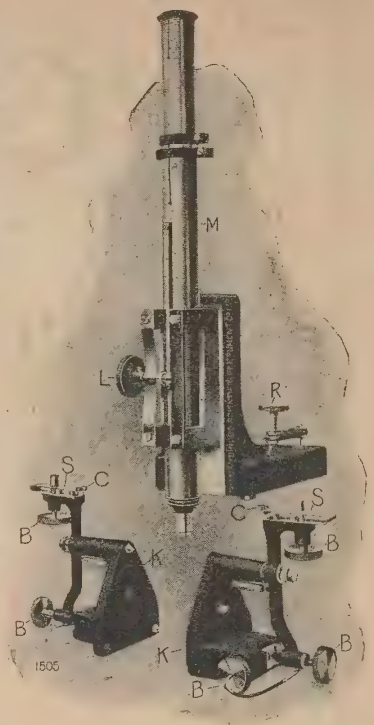


Fig. 3.

As examples of the work accomplished with the aid of this instrument, the two diagrams, Figs 4 and 5, are given The tester was fixed to a 34 ft. planing machine used for planing grinding machine bodies. The error in alignment as read off on the ocular micrometer is represented by the line A in Fig. 4, the ordinates representing the 1/2,000 in. graduations of the instrument. The body was then sprung until the alignment as represented by the line B was obtained.

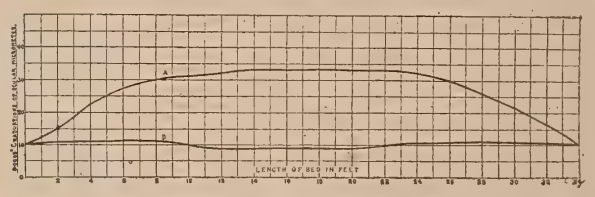


Fig. 4.

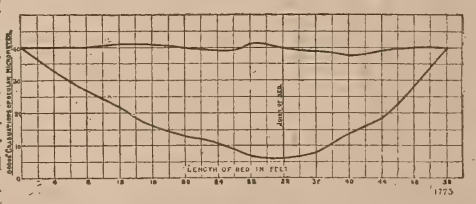


Fig. 5.

The second diagram (Fig. 5) illustrates the same conditions on a 52 ft. planing machine. The line A shows the conditions before and the line B the conditions after using the alignment apparatus.

Further particulars as regards price, etc., can be obtained on application to the Cambridge Scientific Instrument Co., Ltd., Cambridge.—R. M.

AN OLD FRIEND IN A NEW GUISE.

The works magazine of the Aircraft Manufacturing Co., formerly known as the "Aircraft Rag," will in future be styled the "Air-Co. Rag." This change of title is a joyful anticipation of an early cessation of hostilities, and also, of a possible post-war commercial activity of the aeroplane, when things pertaining to the A. M. Co., may possibly be described as "Air-Co."

The October edition of the magazine contains a number of amusing stories and articles, which are of interest, but the usual technical article by Mr. Watts is conspicuous by its absence, owing to the author suffering from influenza, and one imagines that it will be missed by the readers of the "Air-Co. Rag."

It is pleasing to note that the A. M. Co. workers have nobly responded to the appeal of the Prisoners of War Fund, R.A.F., for help, the total sum of their collections amounting to well over £100.—R. M.

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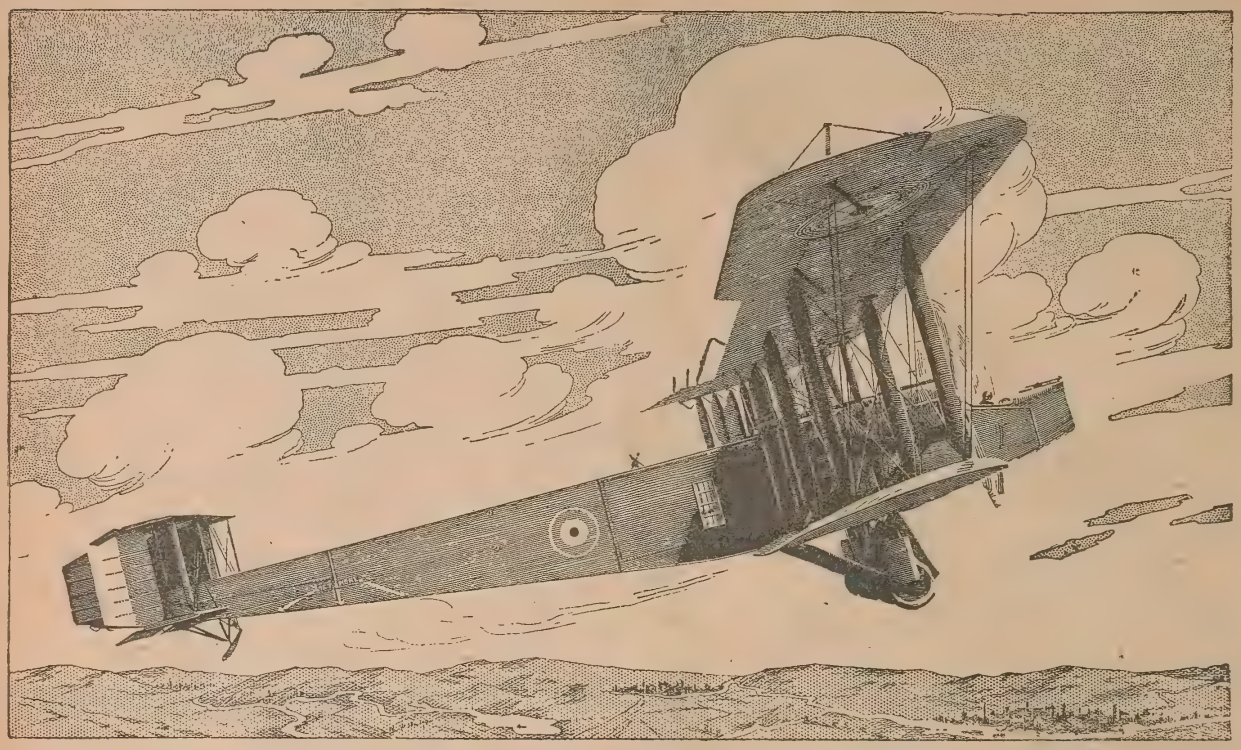
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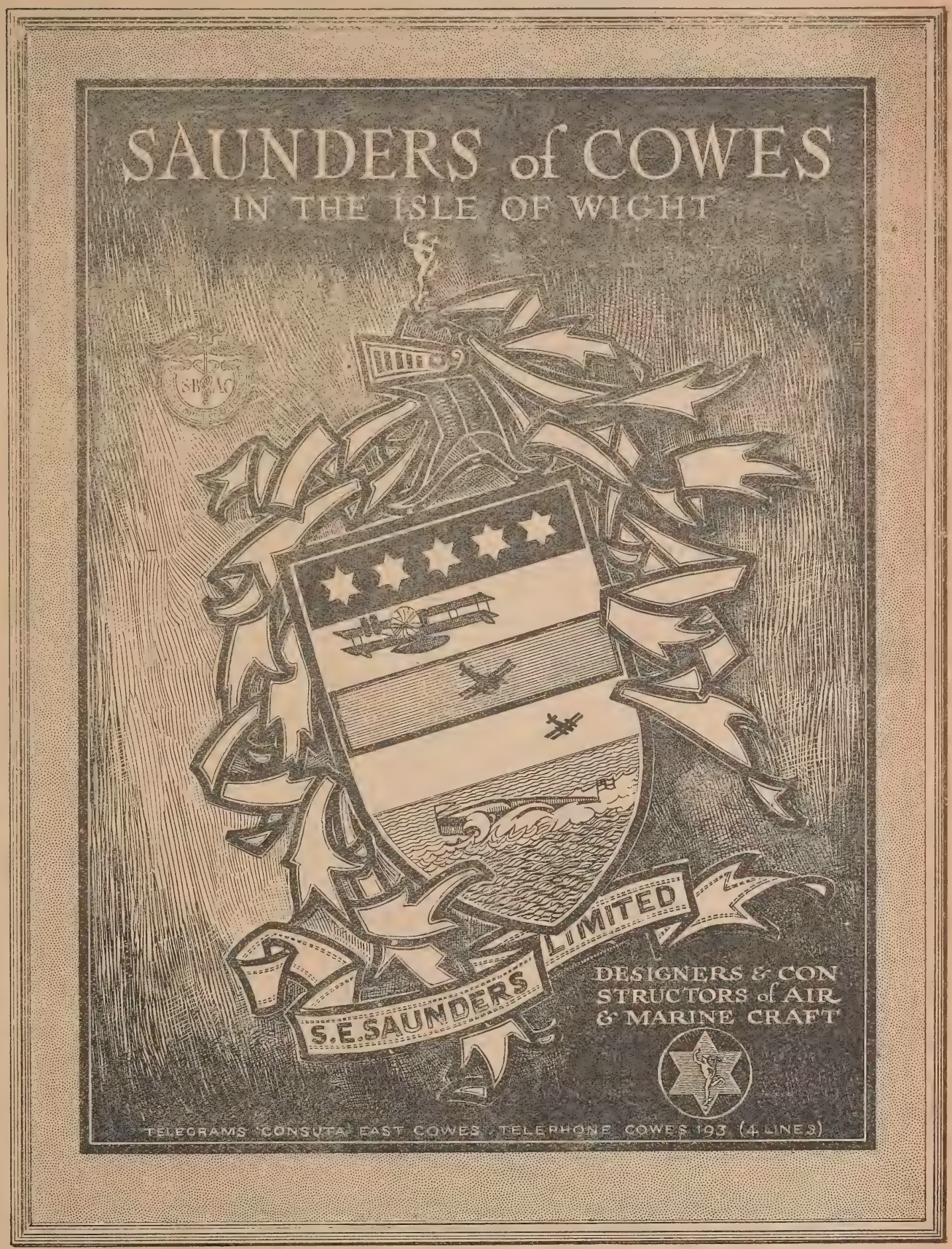
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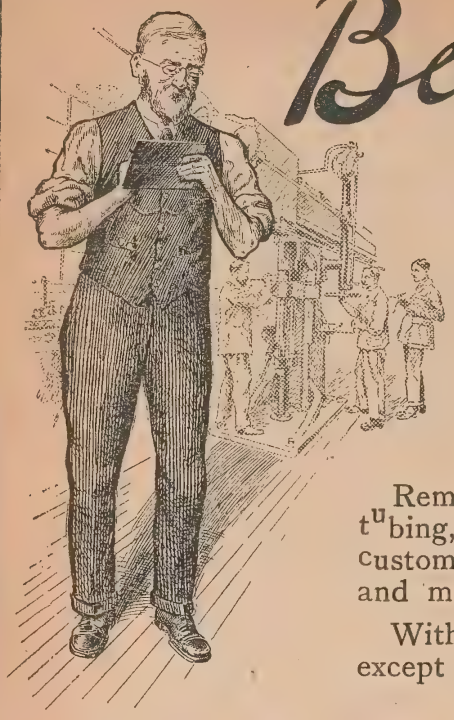
1. 4" diameter "Special" Steel Shaft reduced to 3½" in diameter, with $\frac{1}{64}$" feed, at a cutting speed of 50' per minute, with lubricant. Tool untouched.
2. Same piece of "Special" Steel further reduced from 3½" to 2½", same feed and speed. Tool untouched.
3. 2½" diameter "Special" Steel reduced to 2⅛" diameter, with $\frac{1}{48}$" feed. Cutting speed 150' per minute without lubricant. Tool red hot, but undamaged.
4. Same piece of Steel reduced from 2⅛" to 2" with $\frac{1}{32}$" feed. Cutting speed 200' per minute. Tool point gave way.

The Firm Write:

"The 'Special' Steel used in this test was of a very hard quality, which"
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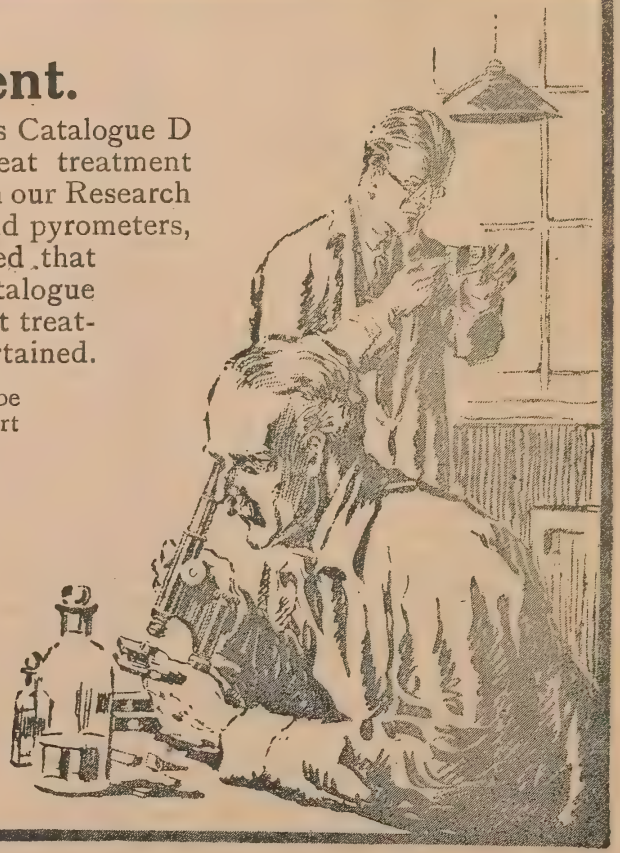
IN Allen's Aeroplane and Motor Steels Catalogue D (Post Free on request) figures for heat treatment are given. These are the figures found in our Research Laboratory, but as not only furnaces and pyrometers, but also requirements, vary, it is advised that a few test pieces be treated, with the Catalogue D temperatures as a guide, and the right treatment for each special purpose thus ascertained.

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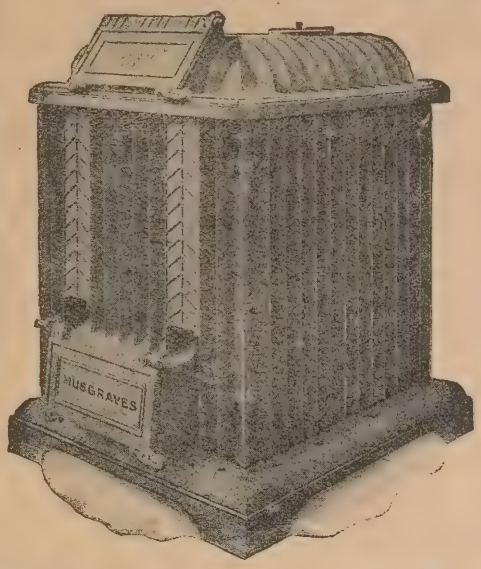


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Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone. London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—

Aircraft Manufacturing Co, Ltd., Hendon. 'Airmanship, Hyde, London." Kingsbury 220.
Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3906.
British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.
Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).
Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).
Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.
Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London." Kensington 7605 (3 lines).
Grahame-White Company, Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120. London Office, 12, Regent Street, S.W.1. Regent 2084.
Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420
Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London." Regent 912.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.
National Aircraft Manufacturing Co, Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.
"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.
The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.
Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester" City 8530-8531, Manchester.
Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 103.
Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.
Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).
Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.
Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.
Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.
Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London." Kensington 6810.
Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129.
White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.
Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.
Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.
Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.
Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London" Regent 378.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Balloons

C. G. Spencer and Sons, Ltd., 56a, Highbury Grove, N.5. "Aeronaut, London." Dalston 1093.

Bent Timber Parts—

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.
The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blinds—

J. Avery & Co., 81, Gt. Portland Street, London, W. "Velarium, London." Gerrard 6620.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.
Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.
Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.
Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670.

Casein—

T. M. Duché & Sons, 6, Eastcheap. "Duché, London." Avenue 2096.
Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C. 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165
Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 & 4404.
P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
Thompson Bros (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

Titanine, Ltd., 175, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312
British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4016.
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleyprcn, Piccy, London." Gerrard 280.
Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.
Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1
Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282
Beardmore Aero Eng, Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.
Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.
Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).
Green Engine Co., Ltd., Twickenham. Richmond 1203.
Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.
Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.
Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.
Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.
The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).
Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 228

Electrical Accessories—

Brown Bros., Ltd., Gt. Eastern St., E.C.2.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston road, London." Museum 70.
Premier Electric Heaters, Ltd., 258, 256, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.
Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6176.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

Gauges—

J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—

Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham "Mosgear, Birmingham." East 407.

Glue—

Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1208.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Meudine Co., 8, Arthur Street, E.C Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3

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Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6242.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham "Fremo, Birmingham." King's Norton 261.

Metal Parts and Fittings (continued)
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).

Propellers (continued)—
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Co., Ltd., Southampton. "Supermarine, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21953.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs.
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Sparking Plugs—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 235.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 642, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

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Springs—
Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1. Firth, Thos., & Sons, Sheffield. "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 406.
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

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Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45." Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.
Avenue. 1432.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

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Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

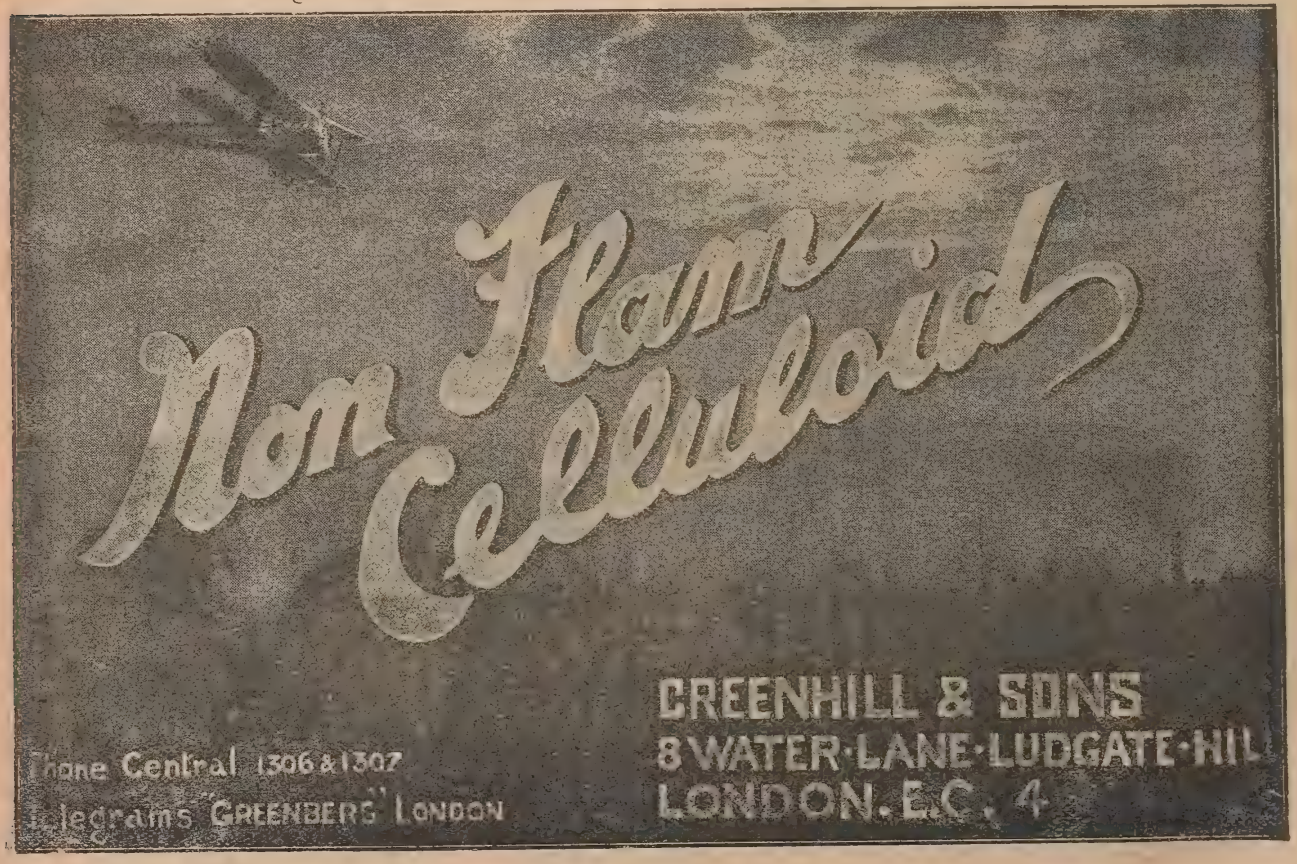
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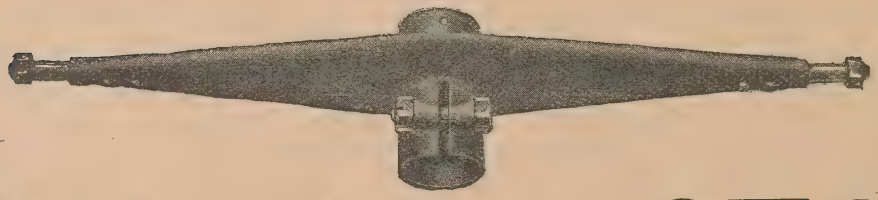
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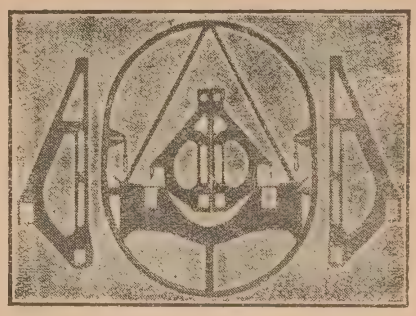
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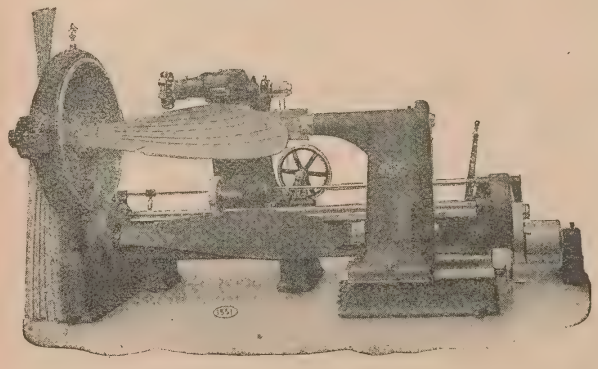
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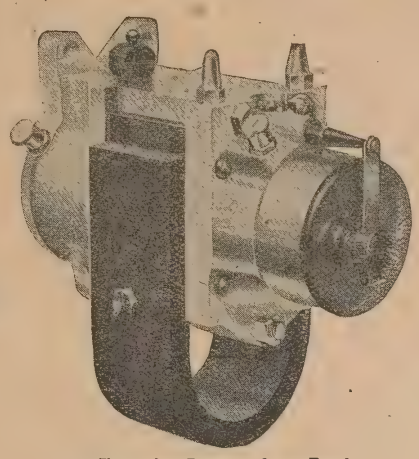
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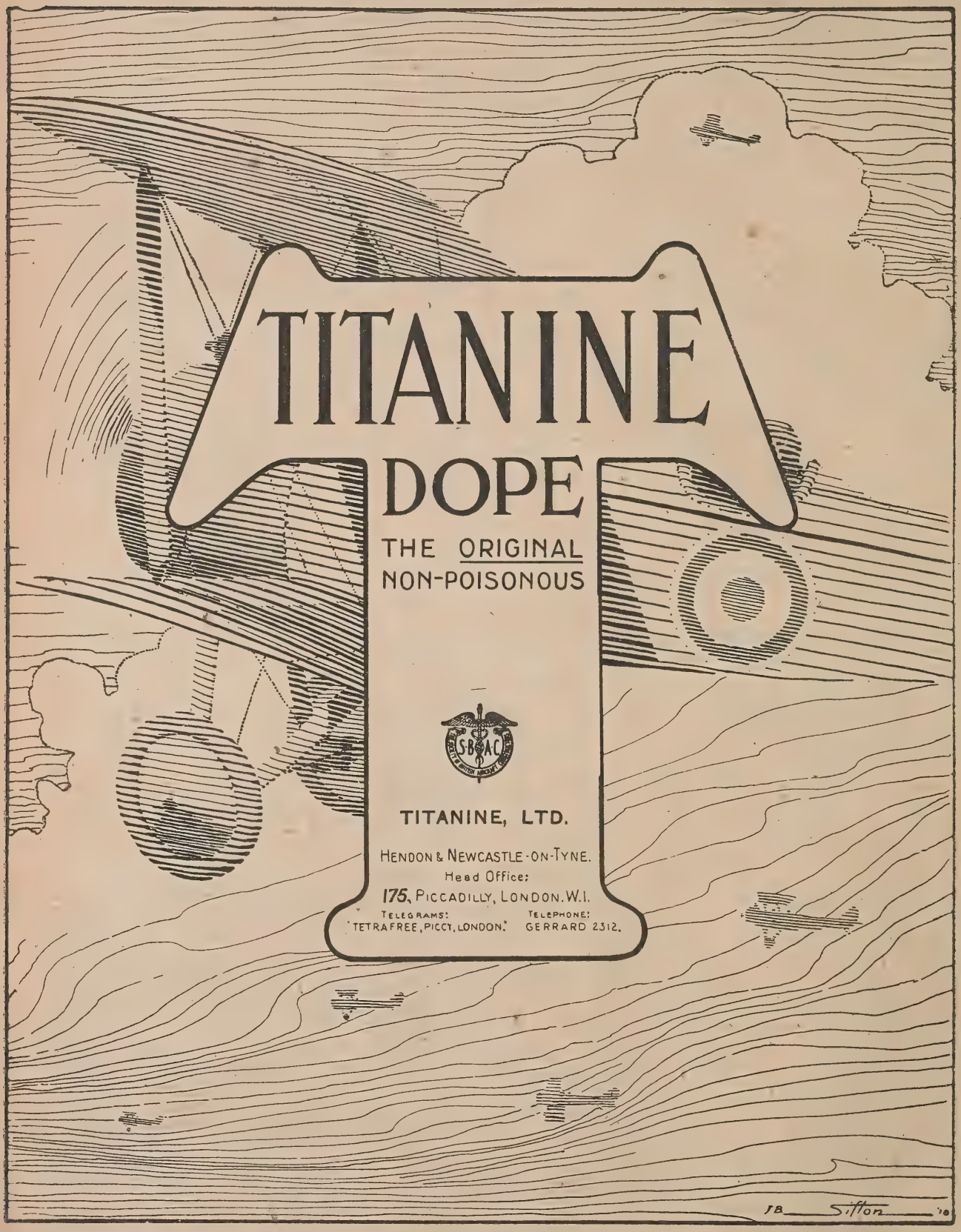
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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records :—

PATENTS APPLICATIONS.

Aeronautical Instrument Co. Aircraft. No. 17706. Oct. 30th.
Aldridge, F. D. Aeroplanes, etc. No. 17648. Oct. 29th.
Bloomer, F. Fairing for aircraft, etc. No. 17676. Oct. 29th.
Boulboulle, E. A. Radiators for aircraft, motor-cars, etc. No. 17757. Oct. 30th.
Brackenbury, E. W. Flying-machines. No. 17732. Oct. 30th.
Calthrop, E. R. Parachutes. No. 17596. Oct. 28th
Caretta, E. Aircraft propellers. No. 17826. Oct. 31st.
Caretta, E. Hollow girders. No. 17924. Nov. 1st
Caretta, E. Hollow girders. No. 17925. Nov. 1st.
Gaymer, J. H. Interrupter-gears for fixed and movable aeroplane guns. No. 17540. Oct. 28th.
Hawkins, S. C. Metal propeller for aircraft. No. 17855. Nov. 1st.
Jones, A. E. Clinometers for aeroplanes, submarines, etc. No. 17788. Oct. 31st.
Jones, E. L. Aeroplanes. No. 17936. Nov. 2nd
Lewis, W. H. Metal propeller for aircraft. No. 17855. Nov. 1st.
Maschinger, H. E. Adjustable scale indicators for indicating course and distances on aircraft, etc. No. 17697. Oct. 30th.
Patterson, T. B. Aeroplanes. No. 17610. Oct. 29th.
Pilaet, R. J. J. Life-saving parachutes for aircraft. No. 17917. Nov. 1st.
Power, R. F. Means for controlling aeroplanes. No. 17964. Nov. 2nd.
Power, R. F. Control of aeroplanes. No. 17965. Nov. 2nd.
Sangster, C. T. B. Apparatus or appliances for mechanically starting aircraft engines. No. 17941, Nov. 2nd.
Shaw, W. R. D. Supporting, controlling, and propelling mechanism of aircraft and marine screws. No. 17765. Oct. 31st.
Smith, E. E. Parachutes. No. 17553. Oct. 28th.
Williams, R. H. Apparatus or appliances for mechanically starting aircraft engines. No. 17941.

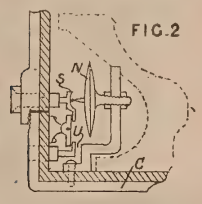
COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER NOV. 21ST, 1918.

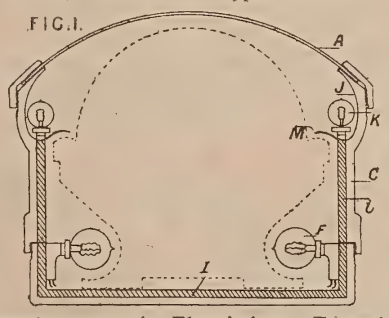
120,069. Oct. 15th, 1917. Pick, W. H., and Morley, F. W. Hydroplanes and aeroplanes.
120,150. Jan. 14th, 1918. Lee, C. E., Fellows, G., and Pratt, C. A. Propellers for aeroplanes and the like

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

118,785. Levels and clinometers. TAYLOR, W., 21, Tweed Street, Berwick-on-Tweed.

To enable oil to be used in place of spirit in levels and clinometers for aircraft, particularly those of the type described in

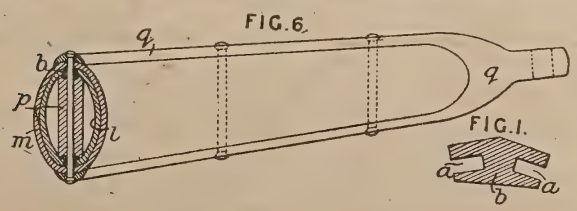




Specification 119,364, the apparatus is enclosed in an electrically warmed casing C lined with asbestos I and furnished with a transparent cover A. Electric lamps F supply the heat, and other lamps K illuminate the apparatus, with the aid of a reflecting-surface J. A flange M deflects heat from below over the surface of the level. Fig. 2 shows a device for maintaining a uniform temperature in the casing. An ether capsule N sensitive to temperature-changes controls two spring-pressed valves S, U, which allow hot air to escape and admit cool air respectively.

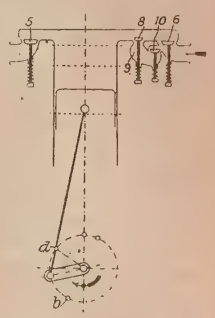
118,883. Wooden spars and tubes. MCGRUER, E., Commercial Wharf, Lambeth, London.

A hollow spar or tube consisting of a board *l* bent round in



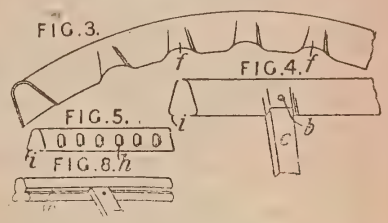
the manner described in Specification 4704/15 has the edges secured in grooves *a* formed on opposite sides of a strip *b*. The projecting portion of the strip may be removed and a second board *m* bent round the first. Two strips separated by a distance-piece *p* may be used. Th spar is secured to metal fittings *q* by rivets passing through the distance-block; or the spar may have the ends closed by blocks.

118,839. Internal-combustion engines. BOUTEILLE, J., 40, Rue Poussin, Paris.



REGULATING.—In engines for aircraft, etc., the compression is maintained substantially constant at all altitudes by rejecting a portion of the charges during the compression strokes. In a four-stroke-cycle engine having the usual admission and exhaust valves 6, 5, portions of the charges are rejected through a cam-actuated valve 8 to a chamber 9 having an automatic outlet valve 10 which delivers into the inlet pipe. The valve 8 opens at the point *b* on the crank-pin circle and closes at the point *d*. A single chamber 9 may serve several cylinders.

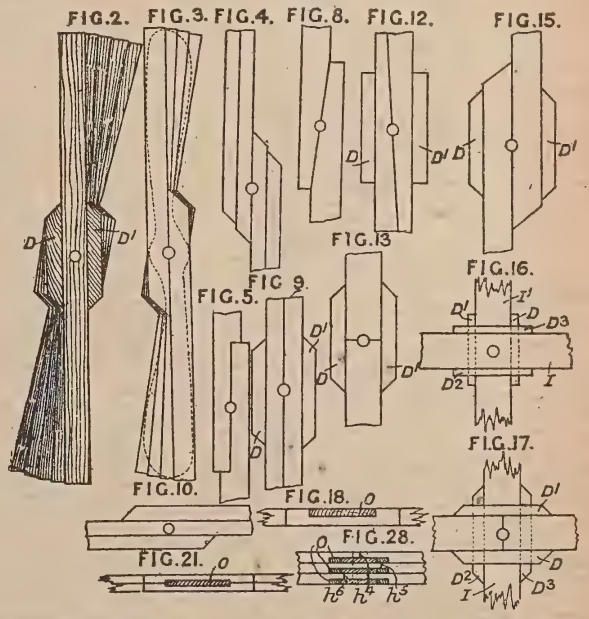
118,931. Aeronautics. MOONEY, D. J., 48A, Gillingham Street, London.



PLANES, CONSTRUCTION OF.—The leading and trailing edges of the planes and control surfaces of aircraft are made up of thin metal bent to channel form and strengthened by corrugations such as *f*, Fig. 3, or *k*, Fig. 8, embossments such as *h*, Fig. 5, and inwardly-turned edges as shown at *i*. The ribs *c* may be secured in outwardly-bent portions *b*, Fig. 4, or in the corrugation *k*, Fig. 8.

118,683. Screw propellers. CLEAVER, H. C., Tudor Works, Park Royal, Willesden, London.

Two-bladed laminæ for assembly as screw propellers are constructed of multiple parts with edge-to-edge diametrical or diagonal glue joints. A large number of modifications are described of which Figs. 3, 4, 5, 8, 9, 10, 12, 13, and 15 show examples, the principle being that when the laminæ are not sufficiently wide to give the requisite strength at the hub, the additional pieces D, D^1 are fitted as shown in Figs. 9, 12, 13, and 15. These laminæ are assembled fanwise as shown in Fig. 2, which also shows the hub-pieces D, D^1. In constructing four-bladed propellers, the laminæ I, I^1 are crossed as shown in Fig. 16, with hub-pieces D, D^1, D^2, D^3, or the modified form shown in Fig. 17 is adopted. The Specification also describes keys *o* for the laminæ, examples being shown in Figs. 18 and 21. Fig. 28 shows a number of laminæ with keys *o*, the joints h^4, h^5, h^6 being in staggered relationship.



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COMMERCIAL AERONAUTICS

THE DISPOSAL OF GOVERNMENT AIRCRAFT.

By "Medway."

I do not know whether anybody has yet made a serious endeavour to come to any conclusion as to whether, when the war ends, the Government is likely to throw upon the market any appreciable number of aeroplanes, and if so, how it will dispose of these machines, and what will be the likely effects of such business on aircraft manufacturers and operating concerns.

The bulk of the machines now in use would, of course, be very far from ideal as commercial aeroplanes, but they might quite conceivably be put into civilian service with a view to operating over a much wider area, on rather the same principles as the motor cab or hire car.

We may, I suppose, take it that the permanent establishment of the Air Force will not equal its war-time establishment, and it remains to be seen whether the surplus stock of machines and engines will be steadily used up on more or less military work without any of it being thrown upon the market. If that does not prove to be the case, very great care will be needed in devising the method of disposal best in the interests of the public and of the industry.

AUCTION SALES.

The Government has generally, when disposing of surplus stores, been able to devise no better system than that of public auctions. This system is even now being employed to get rid of a certain number of motor vehicles, and has, I believe, been applied to certain aero-engines and parts.

As a post-war system for use during the period of reconstruction, it would not do to continue it. The greatest care should be exercised to make sure that no Government aeroplane, rejected from Government service for any reason, shall pass into other hands unless it is in absolutely sound and reliable condition.

Failing this precaution, accidents will inevitably be numerous. The people most deeply concerned in this matter, other than the unknown individuals whose lives will be lost, are unquestionably the members of the Aircraft Industry.

If a batch of machines of some particular make is sold off, and there immediately begins a series of accidents leading to the deaths of its proprietors or their clients, then nearly every report of such accidents will take care to mention the name of the maker of the aeroplane and of its engine. These will be the people whose reputations will suffer.

Incidentally, any considerable number of such accidents would weaken public confidence in the feasibility of commercial aeronautics, and therefore would be a serious national calamity. Thus, it is clear that, before disposal, every Government machine no longer required by the Government should be handed over to its manufacturers, re-sale being prohibited until a complete overhaul has been conducted and the manufacturers are able to guarantee the machine to be sound in wind and limb.

Assuming this precaution to have been taken, the next question is as to the best method of selling. The possibilities are:—

(1) Auctions;
(2) Individual sale direct by Government to the ultimate purchaser;
(3) Sale by some accredited firm or firms acting as agents of the Government;
(4) Re-purchase of machines by manufacturers for sale to the public.

The system of auctions would be bad, because it would provide for no sort of regulation of the competition of the returned machines against the new machines then being produced by manufacturers. This point would not be as important as it is in the case of motor vehicles, because the aeroplane built for civilian use will be more likely to differ from the military machine, whereas, on the other hand, the civilian and the military motor lorry are not very far from identical. Nevertheless, it is freely stated that the various types of aeroplane now in use correspond fairly accurately to the types that will be required for civilian transport and for private ownership.

Considering the first and second methods together, it is questionable whether manufacturers would find it desirable to go so far as to overhaul machines and guarantee their condition if these machines were subsequently liable to be sold against them.

[It is more likely that the overhauling and rebuilding would be done in the present Aircraft Supply Depôts, commonly known as A.S.D.'s, or at the Royal Aircraft Establishment (late R.A.F.).—Ed.]

RE-SALES.

Consequently, we arrive at the third solution, in connection with which we may assume that it would be the manufacturers themselves who would act as the Government's agents for re-sale. The prices would have to be agreed between the Government and the manufacturer, and the selling agent would, of course, take a commission.

It is, however, found in ordinary businesses of most kinds that it pays to employ an agent and to pay a commission on sale. For instance, we do not find a motor manufacturer auctioning his entire output or dispensing with the services of agents to help him dispose of it, despite the fact that the agents must take their profit.

The same principle will, doubtless, hold good in the case of the Government, and better prices would be realised by regulating the sales as suggested. At the same time, the consequences would not be so detrimental to the development of new types.

Sales of returned and new machines would be worked in with one another. People who could not afford the new ones would take the returned machines, and if these did well would presently become purchasers of new machines from the same manufacturers. Thus, the goodwill of the Industry would be protected and even enlarged.

RE-PURCHASE.

The fourth suggested solution is in some ways the simplest and best of all, but it depends on the very important question of whether manufacturers have the funds available for the re-purchase of their own machines.

In general, what with excess profit duty and other special forms of taxation, coupled with war-time extensions of factories and plant, manufacturers are likely to be short of liquid assets. They will need all that they can scrape together for the post-war extension and change of their business and for propaganda connected therewith.

Consequently, this solution, while more or less ideal, is in most cases not practical, and the conclusion is that the third suggestion is on the whole most likely to prove successful. It is, of course, an open question whether the problem of the disposal of returned machines will ever arise at all, or, if it arises, whether it will be of sufficient magnitude to amount to anything.

We must, however, face possibilities. When active warfare ends there must be very large numbers of machines in service. Some will be new, others will be near the end of their life. We cannot ignore the possibility that the Government may attempt to realise on property which it can no longer immediately utilise.

AUSTRALIA, THE BRITISH EMPIRE, AND THE UNITED STATES.

I am very glad to learn from the "Australian Motorist" that there is at least one civilian aviator now in Australia who is assiduously sowing the seed from which commercial aviation in the great Commonwealth will presently ripen. But there is a fly in the ointment—of which, anon.

Mr. R. Graham Carey is an enthusiast who is regarded as being past the age of military work. Consequently, he has been making a speciality of cross-country flights in a pre-war model Blériot with a 50 h.p. Gnôme engine. The great point is that he has treated this machine as a farmer or a business man might treat his motor-car—that is to say, as a means of making business calls for the purpose of inspecting property, and as a machine, the maintenance, repair, and tuning up of which should be a matter entirely within the powers of its owner without expert help. It stands to reason that in this case the owner himself must be at least something of an expert.

The main result of Mr. Carey's work appears to be in the direction of encouraging the private ownership of the comparatively inexpensive and low-powered aeroplane by pastoralists. He has shown the great value of such a machine for the rapid inspection of sheep runs and other extensive agricultural properties. He has shown that, in such districts, a machine may be flown safely and yet sufficiently low to enable the inspection to be thorough enough. Also that natural landing grounds exist in profusion without being specially constructed. It remains to be seen whether, when it is possible to fill the Australian market, the tendency will be in the direction of individual ownership, or will rather lean towards the patronage of a Hire Company, undertaking local work, and, probably, also running a through service to the nearest important town or to some big port.

American Supplies.

The most disturbing thing about the account given of Mr. Carey and his intentions is the statement that, unable to obtain much practical sympathy from the Federal Government, he is now planning a trip to America "to endeavour to obtain the means of placing aeroplanes on the Australian market as a business." I cannot imagine why Mr. Carey, or any other British subject, who has knowledge of what the British Aircraft Industry has done to win the war and to assist the armies of the Oversea Dominions, as well as of Great Britain, can possibly find it necessary or even advantageous to go elsewhere for his supplies.

America has done well in the matter of aeroplanes and pilots, but the comparatively late entry of the United States in the war rendered it impossible for American aeroplanes to perform yeoman service in the time of greatest crisis. This fell to the lot of British machines.

It is rather a poor return to an industry which may, without exaggeration, be said to have saved the war, for an Australian to ignore the assistance of that industry and push the trade of a foreign country without even having the justification which might exist if there were sure evidence that any foreign country, after the war, will produce a better machine at the same price or an equally good machine at a lower price. There are no data to justify such a conclusion, and I appeal to Mr. Carey to reconsider the position, and to remember that, if other great wars break out in years to come, the case may be such that the position of the Empire may depend solely on the ability of the Empire's own industry to produce aeroplanes

Without business in the meanwhile, the industry cannot flourish, and there is no justification for any citizen of the Empire suggesting the importation of any foreign machines whatever, unless our own industry proves unable to fill an immense demand or incapable of filling it on reasonable terms. Neither of these contingencies has yet arisen. Neither is likely to arise.—Medway.

[In justice to Mr. Carey one would point out that while it would be utterly hopeless for him to approach the British Government at the present juncture, it is quite possible that he may achieve some success by going to America, where aeroplanes unfit for military purposes are already being released for civil mail purposes, and in the nature of things there must still be a number of such aeroplanes available from the first aerial programme in the U.S.A.—Ed.]

MR. WHITEHEAD AS A PROPHET.

The following communiqué has been received from Mr. Allin Green, of Castle Buildings, Richmond, Surrey, who seems to be in some way connected with the Whitehead Aircraft Company.

Air-Lines for Passengers, Post and Parcels.

Taxi-Planes at Whitehead Park.

"The coming of peace will see the dawn of a new era of aviation and vast fleets of giant aircraft will be created to carry men and materials swiftly and safely to and from all important centres of the world," states Mr. J. A. Whitehead, Governing-Director of Whitehead Aircraft. He adds that all his plans are ready to found Whitehead Air-lines radiating from Whitehead Park, a huge and perfectly equipped aerodrome within half an hour"s motor run of London. The Aircraft Industry will grow gigantically, because there will be an ever-increasing demand for commercial aircraft to cover more space in a day than can be covered in a week by land and sea. Even now aeroplanes to carry 25 people or several tons of goods have been flown, but Mr. Whitehead predicts the construction of enormous liners of the air. Further, at Whitehead Park, and, doubtless, at other aerodromes, there will be taxi-planes which can be called up at any time to take passengers on long-distance flights. The coming generation, Mr. Whitehead maintains, will take to the air just as the present generation took to the motor-car, and the previous generation to express trains.

[If aeroplanes are to cover more space than land and sea, where will they alight?—Ed.]

MATERIALS FOR INDUSTRY.

Standing Council on Post-War Priority.

The War Cabinet recently set up a Cabinet Committee to deal with post-war priority questions. This Committee consists of Gen. Smuts, the President of the Board of Trade, the Minister of Labour, the Minister of Shipping, the Minister of Munitions, and the Minister of Reconstruction. The secretary is Col. Byrne, C.M.G., 11, Pall Mall, London, S.W.

A Standing Council on Post-War Priority has been appointed to assist the Cabinet Committee and is now at work. The Council has already had before it a survey of the existing stocks of the more important raw materials, and is giving urgent consideration to the question of releasing such materials from any form of control at the earliest possible moment

It is the intention of the Council to consult the trade bodies concerned with regard to any matters affecting the industries they represent, and, by taking them into their confidence, to make the utmost possible use of their organisations in any allocation of materials which may be found to be necessary.

The personnel of the Council is not yet complete, but it is felt that as it is already in session a public announcement on the subject is called for.

The following are the members of the Council who have already been nominated. Additional Labour representatives have been invited to join the Council and their names will shortly be announced :—

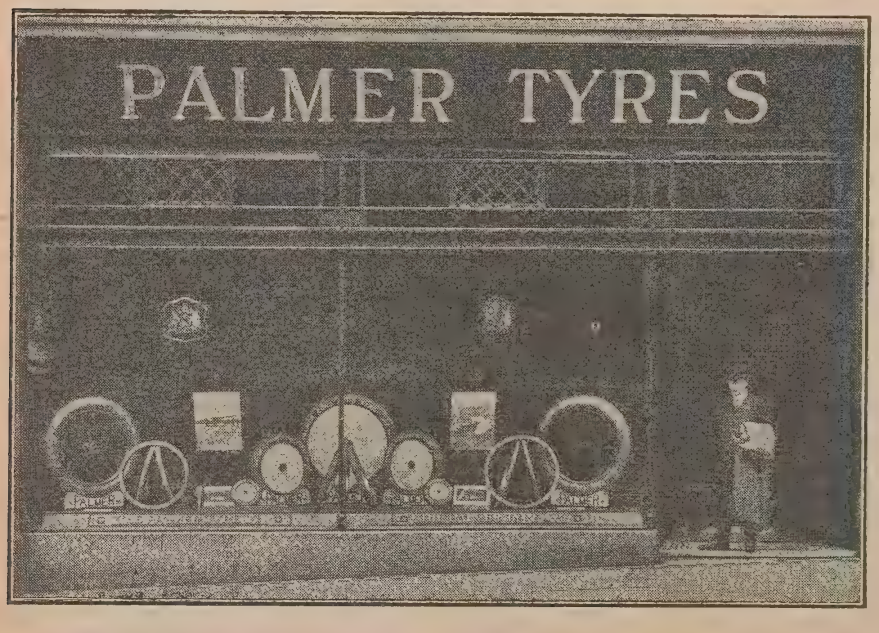
President : The Right Hon. Christopher Addison, M.D., M.P., Minister of Reconstruction.

Chairman : Sir Henry Birchenough, K.C.M.G.

Members : Sir Kenneth Anderson, K.C.M.G. (Orient Steam Navigation Company, London), Ministry of Shipping ; Mr. H. R. Armitage, Bradford Dyers Association, Manchester ; Mr. J. T. Brownlie, Amalgamated Society of Engineers ; Col. Byrne, C.M.G., Secretary of the War Priorities Committee ; Mr. J. Carmichael, contractor, Wandsworth, London, S.W. ; Mr. J. H. Clapham, C.B.E., Litt.D., Board of Trade ; Sir Sydney Henn, K.B.E., Director of Priority, Army Contracts Department, War Office ; Mr. W. J. Larke, O.B.E. (British Thomson-Houston Co., Rugby), Ministry of Munitions ; Sir Peter McClelland, K.B.E., Messrs. Duncan, Fox, and Co., London ; Sir Herbert Rowell, K.B.E., R. and W. Hawthorn, Leslie, and Co., Newcastle-on-Tyne ; Sir David Shackleton, K.C.B., Secretary, Ministry of Labour, ex-President Trade Union Congress, and ex-Chairman of National Labour Party ; Mr. Wallace Thorneycroft, Lochelly Iron and Coal Company, Steel Company of Scotland ; Mr. Alexander Walker (John Walker and Sons, Kilmarnock), Ministry of Reconstruction ; Mr. J. Wormald (Mather and Platt, engineers, Manchester), Chairman of the Industries Committee

Joint Secretaries : Mr. T. R. Gardiner, Ministry of Reconstruction ; Maj. G. D. Hazzledine, Board of Trade.

Communications should be addressed for the time being to the Joint Secretaries, Standing Council on Post-War Priority, 2 Queen Anne's Gate Buildings, Westminster, S.W.1.



The Palmer Tyre Company's New Offices and Show Rooms in Birmingham.

COMMERCIAL ENTERPRISE IN SHEFFIELD.

In the October edition of "The Olympian," the work's magazine of the Blackburn Aeroplane and Motor Co., Ltd., it is stated that the Sheffield Chamber of Commerce are urging the Development Committee of the City Council to give immediate consideration to the question of providing an aerodrome for transport machines in the neighbourhood of the city.

One hopes Leeds and other industrial centres will follow Sheffield's lead.

It appears from this that some people in this country are alive to the possibilities of the aeroplane as a commercial proposition.

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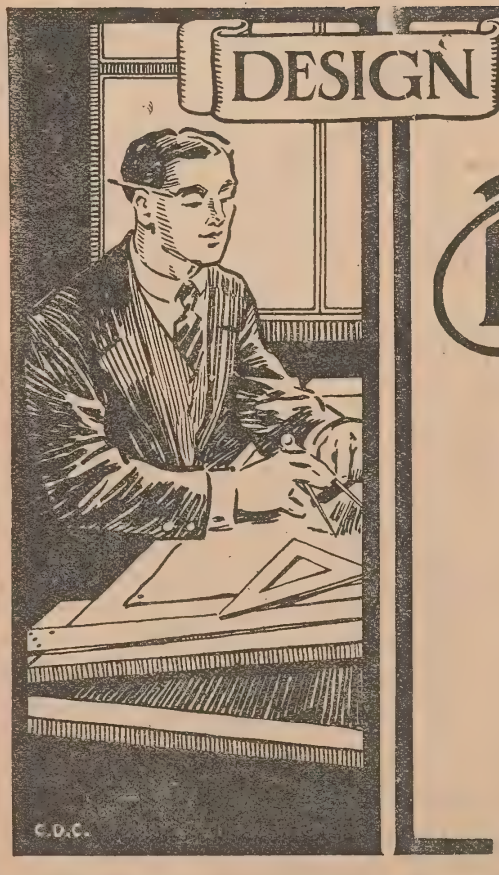
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Nov. 7th, 1918.

COPPER.—The chief problem to be overcome in the United States at present is the provision of labour for the refineries. The latter cannot keep pace with the smelters, and supplies of refined Copper are not at all satisfactory. The refineries are not only short of labour, but some of the labour which has been obtained is of a very inferior grade. The position here is quite satisfactory. There appear to be ample supplies to meet all demands.

Official prices are at present unchanged.

TIN.—This market has quietened down considerably, and, at the present time, hardly any business whatever is being done, buyers being very scarce. There is a general feeling that with the reduction in war risk insurance (due to recent war developments), there will be a further appreciable decline in prices. There may be some grounds for this assumption; but, at the same time, it is not expected that the reduction will seriously affect the prices ruling at present.

The Inter-Allied Control Committee are apparently still completing their arrangements for controlling this metal, and it is expected that the world price will shortly be fixed.

Supplies of Tin are very satisfactory, the stocks held here being ample to cover our present needs; and it can be safely assumed that large stocks must be held in U.S.A., seeing that, according to available statistics, the consumption for six months, ending June, 1918, was 3,000 tons less than the deliveries. Prices here continue unaltered, viz., £334 10s. per ton.

LEAD.—The position here is satisfactory, but the demand for lead in U.S.A. is far in excess of the available supplies.

Prices remain unchanged.

STEEL.—The present military position appears to be having a marked effect upon this market. Buyers are exercising the utmost care. On the other hand, manufacturers are anxiously seeking orders for certain classes of Steel, thinking that the prices will decline considerably within a short time of peace being declared; this is particularly applicable to makers of High-speed Steel.

There has been a reduction in the demand for certain classes of Steels, but the demand for Aircraft Steels does not show any signs of diminution; the supplies of the latter also continue satisfactory, although some of the mills have had their staffs depleted through the influenza scourge.

Official prices continue unchanged.

TIMBER.—The chief item of interest is the possibility of an early cessation of hostilities, and its effect upon the Timber trade. The question is being very freely discussed, and all kinds of prophesies are being made. The general opinion is that the demand for Aeroplane Timbers will decline for a time. On the other hand, there is bound to be a huge demand for ordinary peace-time industries, including motor work, shipbuilding, building houses, cabinet making, railway stock, etc., etc.

The chief concern appears to be the possible continuance of official control.

The trade, apparently, intends to combat this, and strong organisations are being formed in order to protect its interests.

If it is necessary to give priority to the more urgent demands, say, shipbuilding, houses, etc., there is no reason whatever why a simple priority scheme could not be formulated. It is felt that the Ministry should be pressed for a statement on the policy which it is proposed to adopt after peace has been signed.

At the present time, supplies of Oregon Pine are being fairly well maintained, but only small supplies of Silver Spruce have been received.

The arrivals of Mahogany are very thin, and the price continues to advance.

Official prices remain unchanged, although there is at the present time an agitation on foot for an increase in the prices of converted Home-grown Timber.

FABRIC.—The Fabric position is not very satisfactory. Supplies are fairly good, but the quality of some of the material is very bad indeed. It is to be hoped that this will be improved during the next two or three months. Tapes are very difficult to obtain, particularly the large widths, and stocks should be very carefully watched.

Official prices are unchanged.

MAXIMUM PRICES OF SULPHURIC ACID.

An order will shortly be issued by the Minister of Munitions fixing as from Nov. 1st next new maximum prices for sulphuric acid in place of those fixed by an Order dated May 10th, 1918.

Any communication in reference to the new Order should be made to the Director of Acid Supplies, Ministry of Munitions, Department of Explosive Supply, Storey's Gate, Westminster, S.W.1.

FAIREY TALES.

A recent edition of "Fairey Tales" contains a number of interesting contributions. This is not a book of the fantastic stories that are usually associated with the name, but the works magazine of the Fairey Aviation Co., Ltd.

The magazine commences with an editorial, in which the editor complains of the lack of contributions. However, the magazine is not lacking in interest on that score.

A short article on the Fairey works and the principal persons in them makes pleasing reading. The writer points out the great difficulty in obtaining sufficient matter about which to write owing to the modesty of everybody concerned. This article is illustrated by three photographs of the Fairey twin-engined biplane, one of the first machines of its kind.

An amusing drawing of a fantastic type of aeroplane, loading up for Berlin, appears in the magazine. Also, a letter from Scroggs to his old pal 'Orris is published, the orthography of which causes some amusement.

The priceless cartoon depicting an A.I.D. inspector rejecting his own wings, reproduced herewith, also appeared in "Fairey Tales."

The letters from Sir Arthur Duckham and Mr. Boyd Cable; departmental definitions, which, one imagines, is compiled to suit the views of various personages; and many other contributions combine to make the magazine a pleasure to read.—R. M.



A Topical Cartoon from "Fairey Tales," the House Organ of the Fairey Aviation Co., Ltd.

When the time arrives for the resumption of normal business you will be wanting a

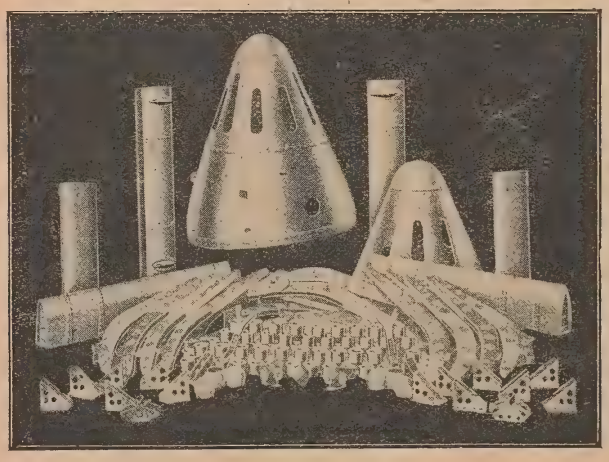
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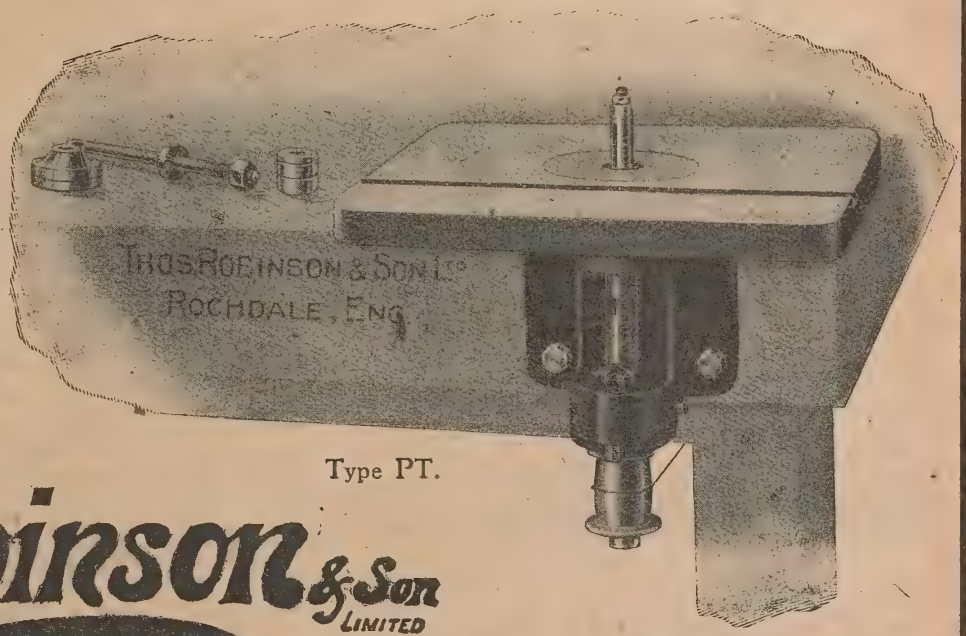
We also make castings in High Tension Bronze; Phosphor Bronze (various alloys for different duties); Brass; Aluminium Crank Cases, Cylinders and Pistons; Iron Cylinders, Pistons and Cylinder Liners.

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When after the war British Industry is subjected to the test of International Competition, its success will depend upon the adoption of the most efficient methods and machinery, so as to reduce manufacturing costs as much as possible.

No one of us will quarrel with that unanimous conclusion of the Electricity Supply Committee of the Board of Trade, nor with the following which they also put on record.

A highly important element in reducing manufacturing costs will be the general extension of the use of Electric Power supplied at the lowest possible price, and it is by largely increasing the utilization of such power that the average output per head, and as a consequence the wages of the worker, can be raised.

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As Electricity will help even to proving itself "The Salvation of British Industry," so will our Organization be a prominent factor in rendering such aid.

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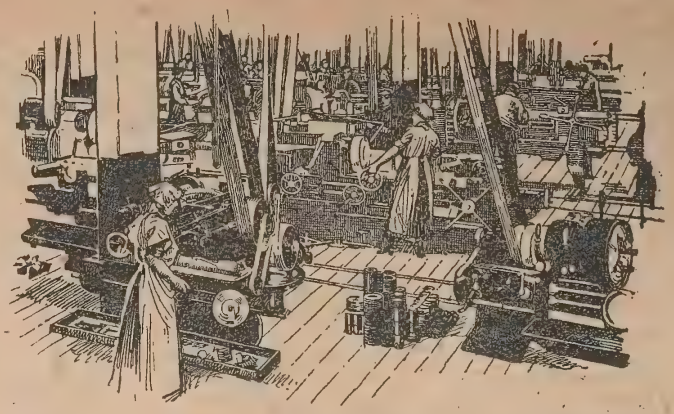
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Are we as sure of the time to follow and our ability to take full advantage of the opportunities presented—

We—the house of Suckling—have made our plans—we shall specialize in the mass production of **AUTO PRODUCTS AND PRESSINGS** and if you are interested invite your enquiries.

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AIRCRAFT FINANCE

CURRENT TOPICS.

HOME PRODUCED PETROL.

The Public interest in the British Oil contract is so lukewarm as to imply scepticism. It is a pity. For endeavouring to prove whether or not there exists oil deposits of commercial value in this country the Authorities deserve some recognition. Even if it turns out that home produced oil, with its valuable by-products, such as petrol, does not economically compare favourably with the imported variety, the nation may have the satisfaction of realising a slight degree of independence which is better than being completely dependent on outside sources.

World's Supplies and Consumption.

Even when peace returns the world supplies of oil may prove none too abundant in relation to consumption, having regard to the changing industrial conditions. Russia is unsettled, so that supplies thence will be disturbed, and Mexico is still far from political stabilisation.

There are other sources of supply, but the United States dominates the world. Of the world's production of 460,600,000 barrels in 1916 she contributed 300,000,000 barrels, and contrived to increase the output last year in order to cope with the demand. In spite of the increase, however, a considerable quantity had to be taken from stocks, which proves that there is room for a bigger world output.

Investment Possibilities.

It is the recognition of this peculiarly favourable position that prompts such a lot of speculative interest in oil shares on the Stock Exchange. As is not unusual in such a movement a lot of chaff is found. For example, those low-priced Russian oil shares have got into the limelight. Some of these may possess intrinsic merit; there are some which can be conscientiously included in the "cheap and nasty" category. If one feels it obligatory to possess oil shares it is better to select those of a sound producer located in politically settled areas.

Effect of the Rolls-Royce Scheme.

Surprisingly little effect has been produced by the proposed further bonus of the Rolls-Royce Co. The idea is to increase the capital to a round million and offer one new share at 20s. in respect of each of the 400,000 shares already issued. These, by the way, are commanding about 56s. apiece, so that the bonus involved by subscribing for the new shares is very substantial. On the dividend achievement of the previous year this is not so apparent as the actual cash dividend was a very moderate one. At the same time, the financial position is strong and the prospects are good.

Napier Shares.

Substantially larger profits, it is believed, have been made by D. Napier & Son during the financial year to September 30th, and this prosperity is expected to result in an enhanced dividend. Just at present the shares are changing hands in the vicinity of 36s., representing, on the previous dividend of 10 per cent. less tax plus a bonus 7½ per cent. free of tax, a yield of about 8 per cent. net. This is a moderate return and warrants a reference to the company's position.

Recent Profits.

The profits of the year to September, 1917, reached £195,376, compared with £73,962 for 1916, £67,758 for 1915, and £54,330 for 1914. The provision for depreciation in 1917 was £33,676, compared with £25,608 in 1916, and £16,428 in 1915, and the reserve fund figured at £60,000 on September 30th, 1917, being built up by appropriations of £20,000 during each of the three years from 1915 to 1917.

It must be admitted, however, that the capital is fairly large, being £650,000 divided into 300,000 7½ per cent. cumulative preference shares of £1 each and selling at 21s. 3d., and 350,000 £1 ordinary shares. In addition there is £100,000 5½ per cent. First Mortgage Debenture stock. All the same, the market professes a good opinion of the shares on dividend possibilities and general prospects.

New Hudson Resumes Bonuses.

By resuming bonus payments the New Hudson Cycle Co. just did what had been generally expected. This bonus is 7½ per cent. on top of the 10 per cent. dividend and compares with 10 per cent. for both 1916-17 and 1915-16, and 10 per cent. plus 10 per cent. bonus in respect of 1914-15. The record of the company has been erratic. No dividend on the ordinary resulted from the operations of 1913-14, while for 1912-13 the dividend was 10 per cent., plus a bonus of 20 per cent., provided to assist shareholders to subscribe for one new £1 share offered at par in proportion to every three held. The shares now stand about 34s., representing 10 per cent. to the purchaser. On the basis of the last dividend they are easily more than a 10 per cent. risk.

Triumphs Bigger Dividend.

Hints have frequently been thrown out of a satisfactory dividend achievement of the Triumph Co., and this is now substantiated. The dividend is to be 10 per cent. and the bonus 7½ per cent., or 17½ per cent. in all, compared with 15 per cent. Just over a year ago the reserve fund was capitalised, involving a bonus of two new shares in respect of each existing share, so that the ability to make a higher distribution on the larger capital proves how increasingly prosperous the company has been.

Prior to the enlargement of the capital the company was paying 30 per cent. dividends for many years. It is, therefore, not one of those concerns that war prosperity has rehabilitated. Indeed, the profits of the past two or three years were below the pre-war standard, so that the company is fortunately placed in regard to the operation of the Excess Profit Tax. The shares stand about 47s.

Whites of Cowes.

The announcement of a week or so ago that A. Mitchelson had acquired a controlling interest in J. Samuel White & Co., of Cowes, is now followed by attempts to place some of the shares among investors generally. The £1 shares are being offered at £5. It appears to be a fancy price Perhaps the shares are worth the £4 premium, but one is not able to express any opinion whatever of their merits on the scanty information offered.

A Big Premium.

It is not stated what the dividend is, but that the average profits for the past three years is £170,000. The circular says that at £5 the shares would return 15 per cent. per annum. This would mean a dividend of 75 per cent. If one were sure that this dividend had been maintained for a series of years the big premium would not be so formidable. The capital is £280,000, of which one-half consists of Preference and the other Ordinary shares, and the profit for 1917-8 is given at £165,525. In the balance-sheet there appears an aviation reserve fund of £3,452.

Dick Kerr Reserves.

Dick Kerr & Co. made a profit of £87,916 last year in comparison with £95,466 and the dividend of 10 per cent. is being repeated: only 6 per cent. was paid two years ago, and previously the company had a spell of adversity. The special reserve for contingencies received £30,000, or £5,000 more than a year ago. This brings the total up to £100,000, and there is in addition a reserve of £50,000 for extensions of manufactures or for replacements of machinery.

British Mercedes Capital Reorganisation.

In order to comply with the requirements of the Air Department of the Government that the working capital be converted into shares, the British Mercédès Motor Co. is to undergo reconstruction. Therefore the company will go into voluntary liquidation, the Managing Director, Mr. Walter Dewis, being appointed liquidator.

This is purely a formality rendered necessary by the circumstances mentioned. A new concern with the same name will be registered as soon as possible to take over the assets and the liabilities. All creditors will be paid in full. When the capital reorganisation scheme has been formulated the details will be chronicled herein.

NEW COMPANIES.

Aero-Taxi, Ltd.—Registered Nov. 6th. Capital £1,000 in £1 shares. To establish, maintain and work an air line or lines for the conveyance of passengers, mails and goods. The subscribers (each with one share) are:—B. Kennedy, 62, London Wall, E.C., solicitor's managing clerk; F. Stanley, 90, Burrows Road, N.W.10, clerk; C. W. Partington, 4, St. Albans Crescent,

Woodford Green, clerk; C. S. R. Toyer, 28, Mansell Road, W.3, solicitor's clerk; G. H. Kennedy, 83, Addison Gardens, W.14, cashier; T. K. Lockington, Hill Brow, Greenhill Park, N.W.10, secretary; R. de M. Davies, 165, Fenchurch Street, E.C.3, solicitor. Minimum cash subscription: 7 shares.

First directors:—J. A. Whitehead and other to be appointed by the subscribers. Registered office: Castle Buildings, Whittaker Avenue, Richmond, Surrey.

Taxi-Plane, Ltd.—Registered Nov. 6th. Capital and all other particulars same as Aero-Taxi, Ltd.

Whitehead Air-Line, Ltd.—Registered Nov 6th. Capital and all other particulars same as Aero-Taxi, Ltd

Whitecraft Air-Line, Ltd.—Registered Nov. 6th. Capital and all other particulars same as Aero-Taxi, Ltd.

Whitecraft Aerial Transport, Ltd.—Registered Nov. 6th. Capital and all other particulars same as Aero-Taxi, Ltd.

Whitehead Aerial Transport, Ltd.—Registered Nov. 6th. Capital and all other particulars same as Aero-Taxi, Ltd.

[Mr. Whitehead seems to be taking several "daring gazes" into the future.—Ed.]

Mero Aircraft Co., Ltd.—Private company. Registered Oct. 30th. Capital, £5,000 in £1 shares. To carry on the business of aeronautical constructors and general engineers, manufacturers of aeroplanes, seaplanes and airships, etc. The subscribers (each with one share) are:—S. Merofolsky, 33, Ridley Road, Dalston, E.8., wood-worker; J. Block, 26, Sandringham Road, Dalston, E.8, cabinet-maker; M. Freeman, 170, Stoke Newington Road, N., fancy goods manufacturer. First directors:—J. Block (Russian); S. Merofolsky (British, of Russian origin); M. Freeman (British, of Russian origin). Office:—8, Academy Buildings, Fanshaw Street, N.1.

Portable Tool and Engineering Co., Ltd.—Private company. Registered Nov. 4th. Capital, £10,000 in £1 shares. (5,000 10 per cent. preference). To take over the business of auto tool and gauge makers and electrical and general engineers carried on by A. H. Stead, E. R. Dipple, L. W. Watson, at 243, Hertford Road, Enfield Highway, Enfield, and at Cedar Works, Enfield Highway. The subscribers (each with one share) are:—A. H. Stead, 112, First Avenue, Bush Hill Park, N., mechanical engineer; L. W. Watson, 508, Hertford Road, Lower Edmonton, N., mechanical engineer; First directors:—A. H. Stead, L. W. Watson, E. R. Dipple and J. Woodall. Registered office:—63, Finsbury Pavement, E.C.

VICKERS' NEW SHARES.

Owing to the shortage of staff through illness in the transfer department, it has been impossible to issue split letters of allotment without considerable delay. Payment on acceptances of splits will therefore be received by Messrs. Glyn, Mills, Currie, and Co. up to Nov. 16th.

THE DEMOBILISATION OF FACTORIES.

The Ministry of Munitions, in a general official notice to contractors, sub-contractors, and workpeople engaged on work for the Ministry, explains the way in which production is to be reduced, and announce the amounts of the unemployment donation for workers of various ages. An Army Order sets out the scheme for the early dispersal of "demobilisers" (officers and men).

The following is the notice issued by the Ministry of Munitions:—

1. The great task before the country is the transformation of industry from war or peace. This necessarily involves the disturbance and dislocation of industries and workshops, and very large numbers of workpeople will have to change their employment, and in many cases their present abodes. This must be faced. In order, however, that the change may be made with the least possible hardship and the minimum of waste exceptional arrangements are necessary. The Government intend to recognise in these arrangements the good work which has been done by munition workers in helping to bring the war to a victorious conclusion.

2. The Minister of Reconstruction on behalf of the Government proposes on Tuesday, November 12th, to make a statement to Parliament on the general reconstruction policy of the Government, and will give full details of the Government's intentions about unemployment donations to demobilised members of H.M. Forces and civil war workers.

3. In order, however, that munition workers and their employers may at once be made aware of Government policy, the following instructions are hereby issued to all factories and firms engaged on work for the Ministry of Munitions:—

(i) There should, so far as possible, be no immediate general discharge of munitions workers.

(ii.) All workers, however, who desire to withdraw from industry or to leave for any reason, and all workers who can be absorbed elsewhere, should be at once released.

(iii.) Production on contracts for guns and gun ammunition, machine-guns, small arms, and small arms ammunition; trench warfare, mortars, bombs, and stores, pyrotechnic stores; aerial bombs; all accesories of the above stores; aircraft and aero engines; and the manufacture of explosives should be reduced in the following ways:—

(a) All overtime should be immediately abolished;

(b) Systems of payment by results should be temporarily suspended, and the customary notice of the transfer from payment by results to time-work should be given;

(c) When a transfer to time-work has taken place a reduction of the hourly week should, wherever possible, be introduced. The reduction of hours will also apply to men already on time-work, and in their case the customary procedure as to reduction of hours should be followed;

(d) Whenever reduced hours are worked on a time-work basis, the number of hours worked must not be less than one-half of the hours in the present normal working week of the establishment. If in any case the earnings of the workpeople for the full weekly number of hours on the short-time system, fall below the following amounts:—

Men of 18 and over, 30s. per week;
Boys under 18, 15s. per week;
Women of 18 and over, 25s. per week;
Girls under 18, 12s. 6d. per week;

their earnings will be made up to these sums by the employer, who will be reimbursed by the State. Where time is lost, the amounts payable will be sums proportionate to the number of hours actually worked.

Efforts to Minimise Unemployment.

4. The adoption of half-time may cause unavoidable discharges, but every effort should be made to minimise unemployment, utilising employees for a short period on labouring and clearing up work. In allotting this work preference should be given to workpeople who are ordinarily dependent upon industrial employment.

5. All persons discharged, or claiming release, can obtain free railway warrants for journeys from the place of employment to their homes, or to places where they have found new employment. The warrants will be issued through the Employment Exchanges. In cases where large numbers are required warrants can be obtained by the employers from the Employment Exchanges for issue at the works.

6. Directions will be given at an early date with regard to war munition volunteers, Army Reserve munition workers, and other special classes of workers.

7. The foregoing instructions are issued for the guidance of contractors until individual firms receive further and particular instructions from the Ministry of Munitions. The loyal and cordial co-operation of all employers is confidently invited.

Unemployment Donation.

1. To provide for the abnormal period that must immediately follow on the cessation of hostilities, the Government have adopted as a temporary measure the following general scheme of non-contributory unemployment donation, which has been laid before them by the Minister of Reconstruction, in agreement with the Minister of Labour.

2. The broad conditions of the scheme are that this unemployment donation shall remain in force for a period of six months from a date to be announced shortly by the Government, and that the benefit can be drawn for a maximum of 13 weeks during that period in cases where unemployment cannot be avoided. The other conditions and necessary safeguards will be explained by the Minister of Reconstruction in his statement to Parliament, and he will then also deal fully with the scheme that will be applicable to demobilised members of H.M. Forces.

3. Under this temporary non-contributory scheme, which will remain in force pending the introduction of a general contributory scheme, demobilised civil war workers will receive benefits on the following scale:—

(a) To unemployed men over the age of 18 years, 24s. a week. To unemployed women over that age, 20s. a week.

(b) There will be an additional allowance in respect of the first dependent child under 15 years of age, 6s. per week, and 3s. for each additional dependent child under that age.

(c) There is a further provision for unemployed juveniles, between the ages of 15 and 18, of 12s. per week for boys and 10s. for girls, conditional on their attending a course of instruction approved by the Board of Education or other central department concerned.

4. It is necessary that industry should be rapidly transformed to peace conditions in order to provide permanent and reproductive employment for the civil workers and for the fighting men returning from the war. The proposals outlined above are solely intended to bridge over the inevitable period of dislocation. It must be emphasised that the non-contributory scheme is a purely emergency measure. While it is operating the existing compulsory unemployment insurance scheme will remain in suspense so far as benefits are concerned. Contributions will, however, still be payable in order to build up a reserve of benefits for contributions when the temporary scheme comes to an end. Thus the special interests of contributors are fully safeguarded; in the meantime the Government are pressing forward with their scheme for general contributory insurance, which will be based on permanent considerations, and must not be prejudiced by the non-contributory scheme here announced.



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(Continued from page 1780.)

officers, the machine in which they flew being unsuitable for low bombing attacks; moreover, they were subjected to very heavy anti-aircraft and machine-gun fire.

Lt. (Hon. Capt.) ARTHUR WATTS WILLIAMS.

Sec. Lt. ALFRED HORACE WATTERS.
Captain Williams, with Sec. Lt. Watters as observer, took part in a night raid on a railway junction. Getting well over the objective they descended to 500 ft. and released four bombs on a moving train. They then, in face of very heavy and accurate fire, flew up and down the junction and railway track at altitudes varying from 250 ft. to 90 ft., bombing the railway and sweeping the station and sidings with machine-gun fire. Capt. Williams has carried out 15 night bomb raids with great success, proving himself an able and courageous pilot. In these raids he has been ably assisted by his observer, Sec. Lt. Watters. This officer possesses qualities invaluable in an observer —quickness in detecting hostile movements as well as first-rate marksmanship.

AWARDED THE DISTINGUISHED FLYING MEDAL.

No. 402108 Serjt.-Mech. FRANK WILLIAM BELL (Egremont).
A keen and reliable observer, who has taken part in 18 bomb raids, invariably showing gallantry and devotion to duty, notably on a certain occasion not long since, when his pilot dived through the centre of an enemy formation of some 30 machines; five of these subsequently closed on his machine, but by skilful manœuvring the pilot gave Serjt. Bell the opportunity, which he took quick advantage of, by shooting down two of the enemy aircraft in flames, while the remaining three broke off the combat and disappeared in the mist.

No. P6434 Serjt.-Mech. HUBERT CECIL HUNT (late Bedf. R.).
A keen and skilful observer, on whose courage and resource pilots place absolute reliance. He has personally shot down and destroyed five enemy machines, two of which he accounted for during one patrol.

No. 406346 Serjt.-Mach. CHARLES LINES (Ipswich).
This non-commissioned officer has taken part in 34 bombing raids, 6 photographic flights, and 14 special reconnaissances at low altitudes. He has also been engaged in many encounters with enemy aircraft. At all times he displays skill, courage and devotion to duty. On one occasion, during a photographic flight of three hours, he was attacked by five enemy machines; in spite of this he successfully exposed 50 plates.

No. 242008 Serjt.-Mech. WILLIAM JAMES PALMER (Chelsfield, Kent).
A first-class observer, who has taken part in 15 bomb raids, displaying at all times great courage and determination. On a recent raid his formation was repeatedly attacked by hostile aircraft; he, nevertheless, under very difficult circumstances, succeeded in taking 18 good photographs, and also collected much valuable information. In the course of the several engagements he shot down an enemy machine in flames.

No. J26800 Serjt. EDMUND WEST WADEY (Polegate, Sussex)
This non-commissioned officer has taken part in 43 night bombing raids as gunlayer, and has rendered most consistent and excellent service, deserving of high praise. He sets a fine example to other N.C.O. observers.

No. 222589 Cpl. FRED WILKINSON (Chorley).
On Aug. 23rd, when returning from a bomb raid, this non-commissioned officer's machine was attacked by three enemy aircraft, and, these having been driven off, two others made a second attack. In the engagement Cpl. Wilkinson displayed great coolness and judgment in warding off these attacks, driving down one of the machines out of control. He has taken part in 42 bomb raids, and his experience and example has been of the greatest value to other observers in the squadron.

No. 207013 Air Mech., 2nd Cl. (actg. Cpl.) HORACE WALTER WILLIAMS (Folkstone).
This observer has taken part in 43 successful raids, showing at all times devotion to duty and affording the most valuable support to his pilot. In a recent engagement, having shot down an aeroplane out of control, he continued in action, although wounded in the left arm, until his ammunition was exhausted, thereby enabling one of our machines, that was heavily attacked, to regain the lines in safety.

No. P22398 Serjt. MALCOLM FLETCHER (attd. from Training Res. Bn.).
A most efficient and keen observer, in whom his pilots place implicit confidence. He has taken part in numerous combats with enemy aircraft, and invariably displays marked fearlessness and skill. He has personally accounted for seven enemy machines since May 21st.

AWARDS OF FOREIGN DECORATIONS.

The undermentioned officers and other ranks of the Royal Air Force have been awarded the Decorations specified, in recognition of distinguished services rendered:—

CONFERRED BY THE PRESIDENT OF THE FRENCH REPUBLIC.

CROIX DE CHEVALIER, LEGION D'HONNEUR.

Lt.-Col. William Avery Bishop, V.C., D.S.O., M.C., D.F.C. (Can Cav. and Avia. Service).

CROIX DE GUERRE AVEC PALME.

Lt.-Col. William Avery Bishop, V.C., D.S.O., M.C., D.F.C. (Can Cav. and Avia. Service).
Lt. Cecil Allchin Bridgland (R. Surrey R.).
Lt. Joseph Michael Carroll (R.E.).
Lt. James Henry Dewhurst.
Maj. Alexander Gray, M.C. (A. & S. Highrs.).
Lt. Ernest Harold Masters.
Capt. (temp. Maj.) Jerrold Bernard Solomon, M.C. (Oxf. & Bucks. L.I.).
Lt. Ernest John Whyte, D.F.C.
Lt. William Wild.

CROIX DE GUERRE, AVEC ETOILE EN BRONZE.

Lt. (temp. Capt.) Basil Everard Catchpole, M.C., D.F.C.

CROIX DE GUERRE.

Lt. Percy Evans.
Lt. Stanislaus Thomas Rekofsky.
No. 43689 Sec. Air Mech. John Horace Cowper Man (Derby).

CONFERRED BY HIS MAJESTY THE KING OF ITALY.

ORDER OF ST. MAURICE AND ST. LAZARUS—CAVALIERE.

Lt.-Col. The Hon. John David Boyle, D.S.O. (Rifle Bgde.).
Lt.-Col. (temp. Col.) Arthur James Child, M.C. (Lond. R.).
Lt.-Col. (temp. Col.) Philip Bennet Joubert de la Ferté, D.S.O. (R. Art.).
Lt.-Col. Reginald Percy Mills, M.C. (R. Fus.).

ORDER OF THE CROWN OF ITALY—OFFICER.

Capt. (temp. Lt.-Col.) Henry Anthony Patrick Disney (Cambs. R.).
Maj Claude Spence MacNab (Cam'n Highrs.).

ORDER OF THE CROWN OF ITALY—CAVALIERE

Capt. (temp. Maj. Claude Gordon Beatson (Middx. R.).
Capt. (temp. Maj.) Ernest Graham.
Capt. Edward Webb Stubbs (L'pool R.).
Maj. John Tudor Whittaker, M.C. (A.S.C.).

SILVER MEDAL FOR MILITARY VALOUR.

Maj. (temp. Lt.-Col.) Charles Hubert Boulby Blount, M.C. (R. W. Surr. R.)
Lt. Ralph Bolton.
Lt. Harold Koch Boysen.
Lt. Neville Isaac Brockbank.
Lt. (temp. Capt.) Jack Cottle, D.F.C.
Capt. (temp. Maj.) Thomas Hinshelwood, D.S.C., D.F.C.
Lt. John Hodgson.
Maj. (temp. Lt.-Col.) Ralph James Jean Hope-Vere.
Lt. James Kingsley Aldrich Jeakes, D.F.C.
Capt. (temp. Maj) John Stanley Fleming Morrison, D.F.C.
Capt. Robert Redfern, D.F.C.
Lt. Edwin Curtic Robinson Stoneman.
Lt. Francis Stanley Symondson, M.C. (Glam. Yeo.).
Capt. (temp. Maj.) Awdry Morris Vaucour, M.C., D.F.C. (R. Art.)
Maj. John Tudor Whittaker, M.C. (A.S.C.).
No. 221380 Cpl. (G) George Ernest Thrift, D.F.M.

BRONZE MEDAL FOR MILITARY VALOUR.

Lt. (temp. Capt. Geoffrey Andrews.
Sec. Lt. Clarence Beagle (Man. R.).
Capt. Clive Oliver Bertram Beale, D.S.O.
Capt. David Cockburn Bell, M.C. (Middx. R.).
Lt. (temp. Capt.) Hilliard Brooke Bell, M.C.
Sec. Lt. Kenneth Oxenden Bracken (R.F.A., S.R.).
Lt. (temp. Capt.) Peter Carpenter, D.S.O., M.C.
Lt. Graham Waters Curtis.
Lt. Malcolm David George Drummond.
Capt. (temp Maj.) Cedric Campbell Durston (Hon. Art. Co.).
Capt. John Charles Bradley Firth, M.C.
Lt. (Hon. Capt.) Joseph Eskel Hallonquist (Can. Inf.).
Capt. Harry Bradford Tancred Hawkins.
Lt. John Gaylor Horne.
Lt. Alan Jerrard, V.C. (S. Staff. R.).
Lt. Clifford McEwen, M.C., D.F.C. (Can. Forces).
Capt. James Mitchell, M.C., D.F.C. (Italy).
Capt. Robert Henry Sharp.
Lt. (temp. Capt.) Thomas Frederic Williams, M.C.
Lt. (temp. Capt.) Percy Wilson, M.C.

CROCE DI GUERRA.

Lt.-Col. (temp. Col.) Philip Bennet Joubert de la Ferté, D.S.O. (R. Art.).
Lt. Arthur Gabbetis Cooper.
Sec. Lt. Tom Newey (Leic. R.).

CONFERRED BY HIS MAJESTY THE KING OF BELGIUM.

THE BELGIAN CROIX DE GUERRE.

Sec. Lt. Robert Grechan Carr.

CONFERRED BY THE HELLENIC GOVERNMENT.

THE GREEK MILITARY MEDAL.

Maj. (temp. Lt.-Col.) Alfred Stanley Hellawell.

CONFERRED BY HIS HIGHNESS, THE BEY OF TUNIS

THE ORDER OF NICHAN IFTIKAR.

COMMANDER.

Capt. (temp. Maj.) Jean de Francia.

OFFICER.

Capt. Erik Edward Barnett.

CHEVALIER.

No. 200672 Master Mech. Bert Arvoy (Putney).
No. 210815 Cpl. Mech. Thomas Everitt Locke (Whittlesea).
No. 204170 Cpl. Mech. Charles Richard Payne (Lavender Hill, S.W.).
No. 210818 Pte. Henry Francis Sheere (Bridgwater).

His Majesty the King has granted unrestricted permission for the wearing of the above-mentioned decorations

CORRECTIONS.—The following are the correct descriptions of officers and other ranks of the Royal Air Force who have been recently granted decorations:—

Col. (temp. Brg.-Gen.) Charles Laverock Lambe, C.M.G., D.S.O. (Awarded Belgian Croix de Guerre in "Gazette" of Sept. 21st, 1918, when the surname was printed incorrectly.)

Lt. James Kingsley Aldrich Jeakes, D.F.C. (Awarded D.F.C in "Gazette" of Sept. 21st, 1918; the Christian names were then incorrectly stated.)

Lt. Arthur Vooght Dufton (observer, attd. Intellg. Corps). (Awarded the French Croix de Guerre in "Gazette" of September, 1918, when the second Christian name was printed incorrectly.)

Lt. William Carpenter Lambert, D.F.C. (Awarded D.F.C. in "Gazette" of Aug. 3rd, 1918; the words "Temp. Capt." were printed there in error.)

No. 65298 1st Cl. Pte. (actg. Serjt.) Ernest Clare, D.F.M. (Chorley). (The award of D.F.M. was gazetted Sept. 21st, 1918, when the Air Force number was incorrectly stated.)

No. F9689 Actg. A.-M. (W.T.) Albert Edward Clarke, D.F.M. (Woodford). (The award of D.F.M. was gazetted Sept. 21st, 18918, when the surname was incorrectly spelt.)

AIR MINISTRY, Nov. 5th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Staff Officers, 1st Cl.—And to be actg. Lt.-Cols. while so empld., if not already holding that rank:—Capt. (actg. Maj.) W. M. Cumming, Oct. 1st; Maj. (actg. Lt.-Col.) A. H. W. E. Wynn, Oct. 18th.

Staff Offier, 2nd Cl.—C. E. Thwaites (temp. Capt., R.A.M.C.) is granted a temp. comm. as Capt., and to be actg. Maj. while so empld, Oct. 1st.

Staff Officers, 3rd Cl.—(T.) A. E. Halton (Maj., Can. Engrs.) is granted a temp. comm. as Capt., and to be hon. Maj., June 29th; (P.) Capt. E. J Sayer, M.C., Oct. 7th.

Staff Officer, 4th Cl.—(T.) M. B. Baker (temp., Sec. Lt. R.E.) is granted a temp. comm. as Sec. Lt., and to be actg. Lt. while so empld, April 5th.

The following temp. appts. are made:—Brig.-Comdr.—Lt.-Col. (actg. Co.) C. L. Courtney, D.S.O., and to be actg. Brig.-Gen. while so empld, Nov. 1st.

Staff Officers, 1st Cl.—R. E. M. Russell, D.S.O. (Bt. Lt.-Col. R.E.), and is granted a temp. comm. as Lt.-Col., April 23rd; (Air.) Lt.-Col. D. L. Allen, April 1st; (P.) Capt. (actg. Maj.) P. Sidney, and to be actg. Lt.-Col. while so empld., Oct. 1st.

Staff Officers, 2nd Cl.—J. M. Nicolle (Capt., S. Staff. R., Spec. Res.), and is granted a temp. comm. as Capt., and to be actg. Maj. while so empld., April 1st; (P.) Lt. (actg. Capt.) L.D. L. Blumenfeld, and to be actg. Maj. while so empld., Oct. 1st; Capt. (actg. Maj.) L. M. Wells-Bladen, and to retain his actg. rank while so empld., vice Capt. (actg. Maj.) A. J. W. Barmby, Oct. 18th.

A.B.C.

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Kaiser (*loq.*): "How is it at such a height on so cold a morning the lubricants do not freeze?"
Gen. Hoppner: "The British have discovered the secret which we have been seeking for months."
Vide "Daily Mail," see above.

A BRITISH FIRM BEATS THE GERMANS

THE SECRET

THE HANDLEY-PAGE.

After the two royalties had descended from the machine it was loaded with dummy bombs in preparation for a flight. The now famous German flying officer Richthofen took the seat which the Kaiser had vacated, and two other officers also boarded the plane. With a terrific roar the two engines were started, and like a bird the aeroplane rose in the air. It climbed rapidly to about 10,000ft., and the Kaiser turned to General Höppner, saying:

"How is it that, at such a height and on so cold a morning, the lubricants do not freeze?"

'The British have discovered the secret which we have been seeking for months," replied the general. "Our great difficulty is now surmounted. [illegible]

Extract from "Life in Essen," Eye-witness's Account.—"Daily Mail," April 8, 1918.

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Staff Officers, 3rd Cl.—Lt. (actg. Capt.) T. Fawdry, April 1st (substituted for notification in "Gazette," July 30th); Lt. J. S. Berdoe, and to be actg. Capt. while so empld., April 20th.

Staff Officers, 4th Cl. (1st Grade).—V. W. H. Ranger, M.C. (Capt., Oxf and Bucks L.I., T.F.), is granted a temp. comm. as Capt., Sept. 20th; Lt. A. R. Owens, and to be actg. Capt. while so empld., Nov. 1st.

Staff Officer, 4th Cl. (2nd Grade).—N. H. Underwood (Lt., Leins. R., Spec. Res.), and is granted a temp. commn. as Lt., April 1st.

Flying Branch.—Capts. to be actg. Majs while empld. as Majs (A.):—E. B. Mason, Sept. 25th; T. F. Hazell, D.S.O., M.C., D.F.C., Oct. 22nd; A. G. Taylor, Oct. 24th; C. Patterson, M.C., Oct. 25th.

Maj. G. H. Cox to be Maj. (A.), from (Ad.), Nov. 5th; Capt. F. R. Sadd to be actg. Maj. while empld. as Maj. (K.B.), Oct 14th.

Lts to be actg. Capts. while empld. as Capts. (A.):—(Hon. Capt.) H. S. Quigley, M.C., D.C.M., May 24th; J. Speaks, Oct. 22nd; S. Turner, Oct. 27th; C. C. Banks, M.C., H. C. Beeston, R. Grady, O. W. A. Manning, Oct. 28th; T. S. Harrison, Oct. 29th.

Capt. (actg. Maj.) A. C. Jowett relinquishes the actg. rank of Maj., Oct. 20th.

Lt. (actg. Capt.) H. M. Goode retains the actg. rank of Capt. while empld. as Capt. (A.), from (S.O.), Oct. 28th

Lts. to be actg. Capts. while empld. as Capts. (A. and S.):—(Hon. Capt.) N. B. Ward, July 1st; J. P. Barnes, Oct. 28th.

Capt. E. A. Bolton to be graded for pay as Capt. while empld. as Capt. (A. and S.), Oct. 28th.

Capt. A. F. E. Warner to be graded for pay as Capt. while empld. as Capt. (A'ship), April 1st.

Lt. H. E. Clark, D.F.C., to be actg. Capt. while empld. as Capt. (O.), Oct. 23rd.

Capt. A. L. Taylor to be graded for pay as Capt. while empld. as Capt. (S.), Oct. 3rd.

Lt. F. C. Vincent to be actg. Capt. while empld. as Capt. (S.), Oct. 28th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—E. G. Boyle, May 10th; H. A. Bartlett, July 20th; W. H. Leaf, July 24th; F. Fawcett, Sept. 17th; H. Bennett, F. K. Wilson, Sept. 18th; J. A. MacDonald, A. Bell, Sept. 19th; L. B. Robbins, Oct. 21st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—C. J. Johnson, Sept. 7th; G. W. H. De Carter, Sept. 8th; H. H. Stores, Oct. 6th; L. E. Jones, J. H. Jameson, E. J. Thornton, B. O. Mayne, Oct. 7th; G. V. Muir, Oct. 17th; C. H. Austin, C. L. Tallmadge, H. G. Brownell, F. Hughes, Oct. 18th; E. L. R. Delteil, W. F. Robertson, J. Garside, Oct. 19th; E. L. Millen, M. L. Selkirk, Oct. 20th; A. Smith, R. P. Kear, J. F. Turpie, Oct. 21st.

Sec. Lt. S. F. Coleman to be Sec. Lt. (A'ship), from (Tech.), Oct. 14th.

Sec. Lt. A. R. Hedgecock (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A'ship), Oct. 3rd.

The following Flt. Cadets are granted temp. commn. as Sec. Lts. (A'ship):—W. M. Doyle, S. W. Gee, Oct. 3rd.

Sec. Lt. R. Shillinglaw (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (Obsvr. Officer), Aug. 17th.

The following are granted temp. commns. as Sec. Lts. (Obsvr. Officers):—H. J. Keen (Lt., Lond. R., T.F.) and to be hon. Lt. (Sept. 29th); W. M. Brewer (Sec. Lt., R.G.A., Spec. Res.), B. Charlton (temp. Sec. Lt., New Armies, Gen. List), Oct. 3rd, C. F. Bailey (temp. Sec. Lt., Rif. Brig.), Oct. 8th; T. N. Donovan (temp Sec. Lt., attd. Bedf. R.), Oct. 16th; J. Stephenson (temp. Sec. Lt., Tank Corps, Oct. 19th; A. A. C. N. Smith, Nov. 1st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—L. E. Morris, C. C. Aley, A. T. Shelley, A. E. Eagle, F. Randells, Oct. 23rd; N. Scott, E. J. R. Hack, E. A. Westwood, Oct. 25th; F. A. B. Andrews, A. M. Brown, L. H. Yalden, W. Emery, A. J. Young, C. E. Millson, Oct. 29th; H. Andrews, Nov. 2nd; J. W. Jakes, W. Leith, H. T. Fieldsend, E. W. Johnson, Nov. 3rd.

Prob. Flt. Officer W. B. Tretheway (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (S.), May 13th (substituted for notification in "Gazette" Nov. 1st).

The following Lts. relinquish their commns. on ceasing to be empld.:—J. A. Stedman (Lt., R.F.A., T.F.), May 4th; P. Waters (Lt., Quebec R.), Oct. 15th.

Lt. N. A. C. Williams is dismissed the service by sentence of a Field General Court-Martial, July 5th.

Lt. C. T. Felton relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Lt., Nov. 6th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service:—E. M. Gilbert, M.C. (Essex R., S.R.), Nov. 6th; H. O. S. Pilkington (Lt., Worc. R., T.F.), date of 1st commn. June 1st, 1916.

E. T. Pruen (Lt., Glouc. R.) relinquishes his commn. on account of ill-health, Nov. 6th.

Sec. Lt. J. R. Brown resigns his commn., Nov. 6th.

The following Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs:—L. H. N. Langworthy, R. L. Rideout, Nov. 6th.

The following Sec. Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs.:—W. A. Ball, A. J. Bonella, C. R. Calder, F. Farmer, S. G. T. Spear, R. R. Truscott, Nov. 6th.

The dates of appt. of the following as Sec. Lts. (A.) are antedated as stated against their names:—V. F. Bendrodt, May 8th; F. R. Pemberton, June 14th; H. Bennett, Aug. 5th; G. A. Coulter, Aug. 10th; R. Smith, Aug. 22; C. F. Baumhofer, Aug. 30th.

The names of Flt. Cadet Richard Albert Cully is as now described and not as in "Gazette" Oct. 22nd.

The name of Flt. Cadet Harold Dures Ranier is as now described and not as in "Gazette" Oct. 15th.

The Christian names of Flt. Cadet Harold George Tyler are as now described and not as in "Gazette" Oct. 22nd.

Administrative Branch.—A. W. C. McFall (Maj., Hon. Lt.-Col., retd pay) is granted a temp. commn. as Lt.-Col., May 6th (substituted for notification in "Gazette" June 11th).

Maj. J. E. Parkin, M.B.E., to be actg. Lt.-Col. while empld. as Lt.-Col., Oct. 1st.

Capt. (actg. Maj.) A. J. W. Barnby retains the actg. rank of Maj. while empld. as Maj. from (S.O.), Oct. 18th.

Lts. to be actg. Capts. while empld. as Capts.:—G. C. Cheshire, Aug. 28th; P. F. Lines, from (A.P.T.), Oct. 26th.

Sec. Lt. J. E. Carter to be actg. Capt. while empld. as Capt., Aug. 3rd.

Capts. to be Capts.:—G. G. Braithwaite, from (S.O.), Sept. 1st; J. C. M Hay, from (A.), Oct. 5th.

To be graded for pay as Capts. while empld as Capts.:—Lt. (actg. Capt.) M. G. Kiddy, Oct. 1st; Sec. Lt. (actg. Capt. J. I. Thompson, Oct. 7th.

Lt. (actg. Capt.) R. R. Prentice retains the actg. rank of Capt. while empld. as Capt., from (S.O.), Oct. 18th.

Lts. (A.) to be Lts.:—(Hon. Capt.) C. G. E. Yarde, July 13th; G. Verden, July 26th; F. V. Tattersall, Sept. 19th; J. L. Probit, Oct. 8th; R. C. Bishop, Oct. 12th; J. H. Firstbrook, Oct. 13th; F. W. Nelson, A. S. H. Ryding, L. Strudwick, Oct. 19th; W. T. Bassett, J. K. Clifford-Jones, L. V. Marchant, Oct. 26th; A. H. Jarvis, Oct. 31st; J. D. Dickson, Nov. 2.

Lts. to be Lts.:—R. S. C. D. Ashby, from (A. and S.), Aug. 24th; C. J. Reynolds, from (K.B.), Oct. 21st; J. C. McKeever, from (O.), Oct 26th; Capt. C. T. Wilkinson to be graded for pay as Lt., from (S.), Sept. 19th; Lt. (actg. Capt.) W. S. de Ropp, to be Lt., and relinquishes the actg. rank of Capt., from (S.O.), Sept. 21st.

The following are granted temp. commns. as Lts.:—R. Elcock (Lt., L'pool R.), April 1st; R. F. Pole (temp. Capt., Hon. Maj.), Gen. List, and to be Hon. Maj., July 18th; R. W. F. Cecil (temp. Capt., Gen. List), and to be Hon. Capt.; Sir A. Hazlerigg (temp. Capt., Gen. List), and to be Hon. Capt.; Sir M. T. Stapleton, Bt. (temp. Capt., Gen. List), and to be Hon. Capt.; D. V. D. Thomas (temp. Lt., Gen. List), Sept. 13th; F. W. Newby (temp. Lt., Gen. List), Sept. 14th; F. G. Steel (Lt., P.F.A., S.R.), Sept. 20th; J. W. Cook (temp Capt., N. Staffs. R., attd. York and Lanc. R.), and to be Hon. Capt., Oct 8th; A. K. Nunes (temp. Capt., B.W.I.R.), and to be Hon. Capt., Oct. 22nd; W. P. Spooner, M.C. (Capt., Essex R.), and to be Hon. Capt., Oct. 23rd; H. B. Day (Capt. and Qrmr., Lond. R.), and to be Hon. Capt., Oct 24th; S. H. Evans (Lt. S. Staffs. R.); E. T. H. Hill (Lt., Essex R.), Oct. 25th.

A. J. Battine (Maj., R.A., Res. of Officers, Retd. List) is granted a temp. commn. as Lt., and to be Hon. Maj., Oct. 31st.

Sec. Lts. to be actg. Lts. whilst empld. as Lts.:—A. E. Boyce, from (T.), April 1st; (Hon. Lt.) G. H. Heys, Sept. 2nd; (Hon. Capt.) A. K. O. Cochrane, Sept. 26th; E. L. Botham, from (T.), Oct. 1st; T. Scott, Oct. 21st.

The following are granted temp. commns. as Sec. Lts., and to be actg. Lts. whilst specially empld.:—A. C., Marquis Douro (temp. Sec. Lt., Gen. List), Sept. 17th; F. L. Carter, Oct. 23rd; C. N. Cruttwell, Oct. 28th; R. N. H. Cole, L. T. Hoare, Nov. 1st.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—A. G. Quinnell, Sept. 27th; A. M. Adam, J. F. R. Stobie, G. Waugh, C. Moss, F. Sumpter, E. C. Haggart, A. A. Dutch, F. E. Shersby, E. P. Woodman, C. R. Calder, E. Apthomas, L. Greatback, F. L. Peploe, E. Higgs, W. R. Wood, P. M. Cooke, W. R. Taylor, R. W. Stoner, Oct. 8th; E. W. Pringle, Oct. 11th.

Sec. Lts. (Obsr. Officers) to be Sec. Lts.:—S. R. Durdin, Oct. 8th; G. L. Shaw, Oct. 9th.

Sec. Lts. (Tech.) to be Sec. Lts.:—W. Fell, Sept. 4th; A. L. Underwood, Oct. 10th.

Sec. Lt. W. Gow to be Sec. Lt., from (A.), Sept. 4th.

The following are granted temp. commns. as Sec. Lts:—J. D. Smart (Sec. Lt., Middx R., T.F.), July 10th; J. McGilley (temp. Sec. Lt., York. R.), Sept. 3rd; L. W. H. Bertie (temp. Sec. Lt., Gen. List), Sept. 18th; L. Singer (temp. Sec. Lt., Labour Corps), J. J. McBrearty (temp. Sec. Lt., attd. R. Dub. Fus.), Sept. 30th; F. J. E. Brake (Sec. Lt., R.F.A., Spec. Res.), Oct. 2nd; S. W. Banfield, Oct. 19th; C. L. Pinker, Oct. 28th; A. E. Ainsworth, H. Auliff, D. F. Bowering, W. R. Bowmer, H. V. Hall, B. H. W. Hatch, H. W. Hills, C. E. Hutchence, J. L. Ingham, E. Le Courteur, W. S. Leeming, E. W. Liddiard, E. B. McLaren, L. R. Merifield, S. Pollard, F. W. Pridham, G. P. Raines, H. G. G. Rawlinges, L. C. Shepherd, C. E. Shirley, G. H. Stanley, R. A. Stoker, R. O. Street, H. Vincent, A. W. Whistlecroft, Nov. 1st.

Capt. W. R. Dainty relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Nov. 6th.

Sec. Lt. R. G. Maskall relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Nov. 6th.

The following Sec. Lts. resign their commns., being physically unsuited for the duties of Pilots or Obsrs.:—W. P. N. Hudson, S. W. White, Nov. 6th.

The surname of Lt. (actg. Capt.) B. F. Bond is as now described, and not Ford, as in "Gazette" Sept. 27th.

The initials of Lt. R. F. Sinclair are as now described, and not as stated in "Gazette," Oct. 15th.

The notification in "Gazette," Oct. 8th, concerning Sec. Lt. W. R. Gemmill is cancelled.

Technical Branch.—Capt. W. R. Abbott to be Capt., from (O.), Sept. 9th.

The following Lts. to be actg. Capts. whilst empld. as Capts.:—S. A. Turner, Aug 14th; N. Goodwin, Sept. 2nd; H. S. Evamy, from (O.), Oct. 1st; D. J. Reason, from (A.), Oct. 11th.

The following Sec. Lts. to be actg. Capts. whilst specially empld.:—H. Chaplin, Sept. 24th; (Hon. Lt.) A. Armstrong (Actg. Lt.) J. Burden, Oct. 14th.

The following are granted temp. commns. as Lts.:—S. J. Furse (temp. Lt., Gen. List), Sept. 14th; R. L. Cantle (Sub-Lt., R.N.V.R), Oct. 12.

Lt. A. E. Lowry to be Lt., from (K.B.), Oct. 9th.

Sec. Lts. to be actg. Lts. whilst empld as Lts.:—(Hon. Capt.) R. H. Brewis, July 16th; (Hon. Lt.) C. S. Edwards, Sept. 2nd; (Hon. Lt.) W. F. Baker, P. Brass (Hon. Lt.) F. N. Trinder, J. E. Tyrrell, Oct. 1st; McL. N. Straight, Nov. 1st; A. A. McConnell, Nov. 2nd

The following Sec. Lts. (actg. Lts.) retain the actg. rank of Lt. whilst empld. as Lts., from (Ad.):—C. A. Assiter, L. H. Bainton, Aug. 26th; W. J. Root, Aug. 30th; G. D. G. Hake, R. N. Tweedy, Sept. 2nd.

Lt. T. S. Oliver to be Sec. Lt., from (A.), but to retain the rank of Lt. without pay and allowances, Sept. 19th.

Sec. Lt. W. Fenton to be Sec. Lt., from (A'ship), Oct. 14th.

The following are granted temp. commns. as Sec. Lts:—P. M. George (Lt., Ches. R., T.F.), and to be Hon. Lt., April 26th); C. H. Quelch (temp. Sec. Lt., R.E.), Aug. 8th; A. F. Johnstone, Oct. 9th; W. E. Wells, J. A. Wilkie, Nov. 1st.

Sec. Lt. J. V. Yates (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., Aug. 4th.

Sec. Lt. (Hon. Lt.) C. W. Barnsley relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Nov. 6th.

Sec. Lt. H. A. Holland (late R.N.A.S.) relinquishes his commn. on account of ill-health, contracted on active service, and is granted the hon. rank of Sec. Lt., Nov. 6th.

Sec. Lt. J. Macbeath relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Nov. 6th.

Medical Branch.—W. Lessey (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., Sept. 20th (substituted for notification in "Gazette." Oct. 11th.

The following are granted temp. commns. as Capts.:—G. Fehrsen, W. Lumley (late Capt., R.A.M.C.), Oct. 30th.

The following are granted temp. commns. as Lts.:—R. E. Burns, Oct. 30th; M. Hyman, Oct. 31st; N. C. Cooper, S. R. E. Davies, J. Gorsky, K. D. F. Waters, Nov. 1st.

Dental Branch.—The following are granted temp. commns. as Lts.:—R. S. H. Drabble, P. J. Proud, Oct. 30th; L. S. Kettlewell, G. J. Roberts, Oct. 31st.

Memoranda.—Lt. (Hon. Capt.) J. C. Watson to be actg. Maj. whilst specially empld., Nov. 5th.

E. J. Sayer, M.C. (Qrmr. and Capt., T.F., Spec. List), is granted a temp. commn. as Capt., April 1st.

To be Hon. Capts.:—Lt. S. J. Read, Sec. Lt. H. J. Bullock.

J. E. Fald (late Lt., R.A.F.) is granted the hon. rank of Lt., Oct. 2nd.

Lt.-Col. G. L. Crossman, C.M.G., D.S.O., relinquishes his appt. as S.O., 1st Cl., April 12th.

Capt. F. Egerton (Lt., Lancers) relinquishes his commn. on ceasing to be empld., Oct. 14th



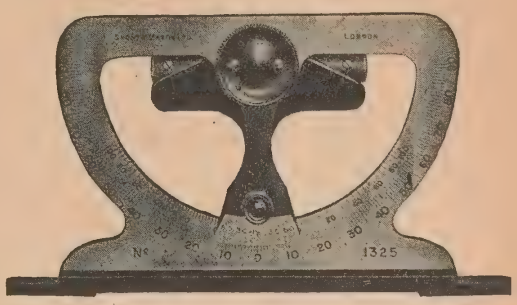
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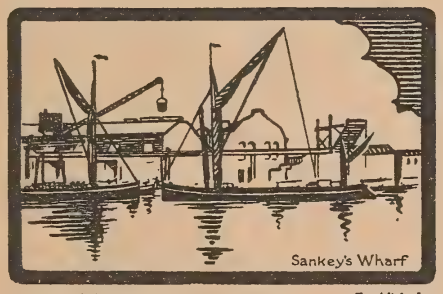
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Sec.Lt. W. A. Allen to take rank and prec. in the Air Force as if his appt. as Sec. Lt. bore date Sept. 9th.

War Office, Nov. 6th.

REGULAR FORCES.—Staff.—The undermentioned temp. appt. is made:—Military Counsellor.—(Graded for purposes of pay as a G.O.C.-in-C., 2nd Cl., without allowances).—Lt.-Gen. Sir D. Henderson, K.C.B., D.S.O., Oct. 7th, 1918.

* * *

The Secretary of State for War has received a dispatch, dated Sept. 18th, from)Gen. Sir Edmund Allenby, G.C.M.G., K.C.B., Comdr-in-Chief, Egyptian Expeditionary Force, which covers the operations in Palestine from Dec. 11th, 1917. The following are extracts therefrom:—

"On the morning of Dec. 22nd, the 54th Division on the right drove the enemy from the orchards which surround Mulebbis, and captured the villages of Rantieh and Fejia.

"During the day the R.F.C. attacked the enemy with bombs and machine-gun fire as he withdrew, inflictiug numerous casualties.

"On the night of Dec. 26th-27th the enemy attacked with great determination astride the Jerusalem-Nablus road. A counter-attack against the right of his attack was carried out immediately by two divisions.

"The 60th Division continued its advance on Dec 29th. At the start no opposition was met with, the enemy having withdrawn to Bireh and the Et Tahuneh Ridge just north of the village, leaving a garrison at Shab Salah, a precipitous hill 1,000 yards south of Bireh overlooking the Jerusalem-Nablus road. As soon as the leading troops came within range of Bireh they were met with heavy rifle and machine-gun fire. Some delay was caused owing to the difficulty experienced in bringing the guns forward.

"During these days the R.A.F. not only gained valuable and timely information, but repeatedly attacked the enemy's troops and transport with bombs and machine-gun fire from low altitudes, inflicting considerable losses."

Referring to the operations during February, Gen. Allenby says:—

"The R.A.F. rendered valuable service, but mist and low-lying clouds interrupted their work to a great extent."

Concerning the remaining months up to August, Gen. Allenby writes:

"During these months of reorganisation various minor operations and a number of raids have been carried out.

"This activity on our part has not been imitated by the enemy, except in one instance. Then the brunt of the fighting fell on German troops. Early in July movements of troops, and increased artillery and aeroplane activity, foreshadowed an attack on our defences in the Jordan Valley.

"Throughout the whole period, the work of the R.A.F. has been of great value. Fifty-three hostile aeroplanes have been destroyed, in addition to 23 which have been driven down out of control. The enemy's troops, camps, and railways have been bombed with good results, while very important photographic work has been carried out. Co-operation with the other arms has been excellent."

War Office, Nov. 7th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Sodn. Comdr.—Lt. (temp. Capt.) E. E. Hodgson, Spec. Res., from a Flt. Comdr., and to be temp. Maj. whilst so empld., July 10th, 1917.

War Office, Nov. 8th.

His Majesty the King has approved of the undermentioned rewards in recognition of bravery in the field:—

Awarded the Military Cross

Sec. Lt. (actg. Lt.) Frank Bacon Palmer, R.A.F.

On the night of August 24th, 1918, this officer performed very gallant and meritorious service. In an attack on one of our aerodromes by hostile aircraft, a hangar full of machines was set on fire, illuminating the whole camp, making the aerodrome an easy mark for the raiders, who continued dropping bombs for fifteen minutes. Great confusion ensued, and twenty officers and men were wounded.

Lt. Palmer was blown over by the explosion of a bomb, and although badly shaken he exhibited coolness and courage of a high order, and by his promptitude succeeded in collecting the wounded, placing them in comparative safety, and also managed to remove the machines and transport from the burning hangars and shelters, notwithstanding the continued dropping of the enemy's bombs in the area.

Awarded the Military Medal.

63289 Air Mech. 2nd Cl. W. L. Baker, R.A.F. (Finedon).
9521 Air Mech. 1st Cl. G. Emmitt, R.A.F. (Spalding, Lincs.)
99481 Air Mech. 3rd Cl. H. Flather, R.A.F. (Mexborough).
29263 Serjt.-Mech. W. E. Layzell, R.A.F. (Romford).
18387 Cpl.-Mech. F. Ludlow, R.A.F. (Haggerston, N.).
8680 Cpl.-Mecht. E. Mabbutt, R.A.F. (Kingston-on-Thames).
114784 Serjt. J. Nichol, R.A.F. (Durham)
27416 Serjt.-Mech. T. Owens, R.A.F. (Salisbury, Wilts.).
19740 Pte. (1st) K. M. Paterson, R.A.F. (Clodden Moore, Inverness).
20243 Serjt.-Mech. G. T. Ridler, R.A.F. (Dursley).
12375 Cpl. A. E. Sackett, R.A.F (Bedford).
24970 Air Mech. 3rd Cl. I. F. Sparks, R.A.F. (Sidmouth)
9891 Serjt. F. W. J. Sibley, R.A.F. (Barking).
134856 Cpl. (actg. Sergt.) S. A. Taylor, R.A.F. (Dundee).
17991 Air Mech. 1st Cl. A. Teakle, R.A.F. (Westminster, S.W.).
104631 Cpl.-Mech. W. Windebank, R.A.F. (Guildford).
33801 Air Mech. 1st Cl. A. J. Winter, R.A.F. (Peterborough).
134709 Air Mach. 3rd Cl. D. A. Wood, R.A.F. (Ipswich).

Air Ministry, Nov. 8th.

His Majesty the King has been graciously pleased to approve of the award of the Victoria Cross to:—

Lt. (actg. Capt.) Ferdinand Maurice Felix West, M.C., R.A.F. (fmly. of the Spec. Res., R. Munster Fus.), in recognition of his outstanding bravery in aerial combat.

Capt. West, while engaging hostile troops at a low altitude far over the enemy lines, was attacked by seven aircraft. Early in the engagement one of his legs was partially severed by an explosive bullet, and fell powerless into the controls, rendering the machine for the time unmanageable. Lifting his disabled leg, he regained control of the machine, and, although wounded in the other leg, he, with surpassing bravery and devotion to duty, manœuvred his machine so skilfully that his observer was enabled to get several good bursts into the enemy machines, which drove them away. Capt. West then, with rare courage and determination, desperately wounded as he was, brought his machine over our lines and landed safely. Exhausted by his exertion, he fainted, but on regaining consciousness insisted on writing his report. (The award of the Military Cross was gazetted on July 26th, 1918.)

Awards of Foreign Decorations

His Majesty the King has granted unrestricted permission for the wearing of the undermentioned Decorations, conferred on the Officers indicated for valuable services in connection with the war:—

Conferred by the Government of the French Republic.
(For Services in Flanders.) ...
Croix de Guerre avec Palme.

Maj. (actg. Lt.-Col.) Herbert Arthur Reginald Aubrey, M.C. (Sea Patrol; Shrops. L.I.).
Capt. René Maurice Bayley (Sea Patrol; S.A. Horse).
Maj. Bertram Charles Bell, D.S.O., D.S.C. (Sea Patrol).
Lt. (actg. Capt.) Robert Mathan Berthe (Sea Patrol).
Lt. William Black, M.C. (Sea Patrol; Cam'n Highrs.).
Maj. Herbert George Brackley, D.S.O., D.S.C. (Sea Patrol).
Lt. (actg. Capt.) Colin Peter Brown, D.F.C. (Sea Patrol).
Lt. Archibald Buchanan, D.F.C. (Sea Patrol).
Col. (actg. Brig.-Gen.) Charles Laverock Lambe, C.M.G., D.S.O. (Sea Patrol).
Lt. George Selby Lewtas (Sea Patrol).
Sec. Lt. (actg. Lt.) Hamish Duncan McLaren, D.F.C. (Sea Patrol).
Lt. (actg. Capt.) Thomas Walter Nash, D.F.C. (Sea Patrol).
Maj. (actg. Lt.-Col.) Edward Osmond (Sea Patrol).

For Services in Italy.

Maj. John Tudor Whittaker, M.C. (A.S.C.).

Conferred by the Government of Italy.
Order of the Crown of Italy.
Grand Officer.

Lt.-Gen. Sir David Henderson, K.C.B., D.S.O.
Maj. John Lawrence Baird, C.M.G., D.S.O., M.P (Scottish Horse).

Commander.

Maj.-Gen. Sir Hugh Montague Trenchard, K.C.B., D.S.O
Maj.-Gen. Sir Godfrey Marshall Paine, K.C.B., M.V.O.
Maj.-Gen. William Sefton Brancker, A.F.C. (R.A.).
Maj.-Gen. John Maitland Salmond, C.M.G., C.V.O., D.S.O. (R. Lan. R.).
Lt.-Col. (actg. Brig.-Gen.) Guy Livingston, C.M.G. (Lond. R.).
Maj.-Gen. Sir Charles Edward Callwell, K.C.B. (fmly. attd. Air Board).

Officer.

Lt.-Col. (actg. Brig.-Gen.) James George Weir, C.M.G. (R.F.A.).
Lt.-Col. (actg. Brig.-Gen.) Cyril Louis Norton Newall (Gurkha Rifles).
Lt.-Col. Ivan Buchanan Dayson.
Lt.-Col. (actg. Col.) The Hon. William Francis Forbes-Sempill, Master of Sempill, A.F.C.

Cavaliere.

Lt.-Col. Alexander Emil Jacques Reiss, O.B.E.
Maj. Albert Victor Thompson.
Capt. (actg. Maj.) Fernley Turner Bridger.
Capt. Francis Gordon Hogarth.

Order of St. Maurice and St. Lazarus.
Officer.

Lt.-Col. (actg. Brig.-Gen.) William Alexander, C.M.G., D.S.O. (R. Highrs.).

Cavaliere.

Maj. The Hon. Edward Alexander Stonor.
Capt. (actg. Maj.) John Evelyn Leslie Wrench, C.M.G.
Maj. (temp. Lt.-Col in Army) Thomas Brocklehurst Philips (formerly connected with Air Board).

Bronze Medal for Military Valour.

Capt. William Wedgwood Benn, D.S.O., D.F.C. (Lond. Yeo.)

Conferred by the Government of Japan.
The Order of the Rising Sun.
2nd Class.

Maj.-Gen. Sir Godfrey Marshall Paine, K.C.B., M.V.O.

3rd Class.

Col. (actg. Maj.-Gen.) Arthur Vyell Vyvyan, C.B., D.S.O.
Col. (actg. Brig.-Gen.) Harold Douglas Briggs.

4th Class.

Capt. (actg. Maj.) William Peer Groves.

The Order of the Sacred Treasure.
3rd Class.

Lt.-Col. Harry Delacombe.

Conferred by the Government of Belgium.
(For Services in France and Flanders.)
The Order of Leopold, Commander, together with the Belgian Croix de Guerre.

Maj.-Gen. John Maitland Salmond, C.M.G., C.V.O., D.S.O. (R. Lanc. R.).

Air Ministry, Nov. 8th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Asst. Director.—Graded for purposes of pay as S.O. 1st Cl.—Capt. G. W. Parkinson, M.C., and to be actg. Lt.-Col. whilst so empld, Oct. 10th.

Staff Officer, 1st Cl.—The date of appt. of Lt.-Col. C. R. Finch-Noyes, D.S.O., is Oct. 10th, and not as stated in "Gazette," Oct. 25th.

Staff Officer, 2nd Cl.—(T.) E. C. St. John (Lt. R.N.V.R.) is granted a temp. commn. as Capt., and to be actg. Maj. whilst so empld., April 9th.

Staff Officers, 3rd Cl.—Lt. (actg. Capt.) A. D. Finney, and to retain his actg. rank while so empld., Oct. 20th; (T.) G. W. Parkinson, M.C. ((Capt., R.E., T.F.), is granted a temp. commn. as Capt., June 11th.

Staff Officer, 4th Cl.—(T.) W. D. Cairns (temp. Lt., R.E.) is granted a temp. commn. as Lt., April 18th.

The following temp. appts. are made:—

Area Comdr.—Col. (actg. Brig.-Gen.) P. W. Game, D.S.O., and to be actg. Maj.-Gen. while so empld., Oct. 14th.

Staff Officers, 2nd Cl.—And to be actg. Majs. while so empld.:—(P.) Capt. J. Rubie, April 1st; (Air) Capt. H. A. Fordham, Nov 1st.

Staff Officers, 3rd Cl.—And to be actg. Capts. while so empld. if not already holding that rank:—Capt. J. M. Mitchell, April 1st; (Air) Lt. W. H. Howell, Oct. 14th; (Q.) Sec. Lt. (actg. Lt.) H. B. Fairbrother, Oct. 22nd; (P.) Lt. F. Dance, Nov. 1st.

Staff Officers, 4th Cl. (2nd Gr.).—W. E. Rubens (Lt. Essex R., T.F.), and is granted a temp. commn. as Lt., Aug. 21st; Sec. Lt. J. W. Mayall, and to be actg. Lt. while so empld., Oct. 8th; Lt. J. H. Pollitt, Nov. 1st.

Flying Branch.—Maj. C. O. F. Modin, D.S.C., reverts to Capt. (A.) at his own request from (S.O.), Oct. 25th.

Lt. C. L. Morley, D.F.C., to be actg. Capt. while empld. as Capt. (A.), Oct. 27th.

Capt. W. F. Dickson, D.S.O., to be graded for pay as Capt. while empld as Capt. (A. and S.), Oct. 7th.

C. J. Geddes to be Lt. (A.), from (T.), Oct. 18th.

To be Lts. (A.) from (Obsr. Officer):—G. M. Moore, April 27th; L. W. Heath, Oct. 14th; M. H. Picot, M.C., Oct. 18th; L. A. Powell, M.C., Oct. 19th; H. C. Black, Oct. 21st.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.):—G. Slater, April 11th; H. J. O'Connor, July 26th; F. W. Long, July 27th, J. Bradbury, July 30th (date of 1st Commn. Feb. 7th; F. H. Soloman, Aug. 29th; H. Stamp, Sept. 30th; C. H. Stocks, Oct. 11th; M. F. Johnstone, Oct. 13th; W. J. Bird, L. L. Nelson, W. W. Ash, W. H. L. Oxland, Oct. 15th; A. R. Lamb, A. V. Redwood, P. J. Dowell, Oct. 16th; F. E. B. Jones, P. Crumner, L. B. Clarke, G. Pascal,

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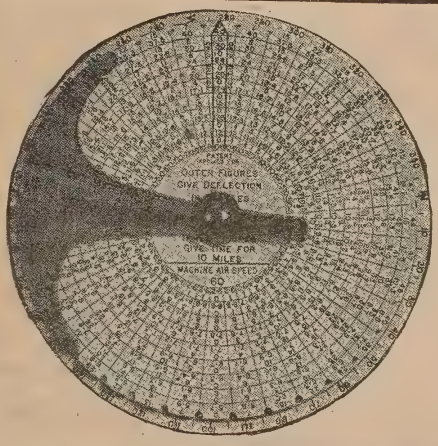
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Oct. 17th; J. S. Howard, W. Mullen, J. H. C. Norgarb, J. Fraser, Oct. 18th; G. R. Bradley, P. McNaught, E. H. Duffy, D. Davies, A. W. Cornforth, D. M. Jenkins, Oct. 19th; W. T. Doherty, J. H. Mitchell, J. T. Pelletier, J. M. Branton, Oct 20th; J. N. Boanson, Oct. 23rd.

The following are granted temp. commns. as Sec. Lts. (A.) :—B. O. Davis (Sec. Lt., Yorks. L.I., T.F., July 27th; F. W. Hicks (Sec. Lt., Lond. R., T.F., Oct. 14th; W. D. Blatch (Lt., Derby Yeo., T.F.), and to be hon. Lt., Oct. 15th; J. S. Monteith (Sec. Lt. Scot. Rif., T.F.), W. R. Vane (temp. Sec. Lt., Rif. Brig.), H. C. Hall (temp. Sec. Lt., Essex R.), Oct. 16th; W. S. Shaw (Lt., W. Rid. R., T.F.), and to be Hon. Lt.. H. Goodier (Sec. Lt., L'pool R., T.F.), J. M. Donald (temp. Sec. Lt., Hamp. R.); W. V. Hyde (Lt., R. Innis. Fus., Res.), and to be Hon. Lt., W. H. Little (Sec. Lt., Middx. R., T.F.), F. A. W. Wilks (temp Lt., R. War R.), and to be Hon. Lt., Oct. 17th; H. Edge (temp Sec. Lt., W. York. R.), D. A. Hughes (temp. Sec. Lt., Ches. R.), A. Woolsey. (Sec. Lt., North'n R.), C. Sneesby (temp Sec. Lt., Suff. R.), A. R. Lees (Sec Lt., Lond. R., T.F.), Oct. 18th; J. A. MacDiarmid (Lt., Sask. R., C.E.F.), and to be Hon. Lt., P. W. Smith (Sec. Lt., R. Fus.), L. Beavis (Sec. Lt., S. Staffs. R.), T.F.), G. B. Savi (Lt., R.D.C., T.F.), and to be Hon. Lt., Oct. 19th; G. M. Badley (Lt., Linc. R., T.F.), and to be Hon. Lt., Oct. 20th; J. Jackson (temp. Sec. Lt., Rif. Brig.), Oct. 22nd

The following prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.) :—G. R. T. Donaldson, May 9th; G. Campbell, Oct. 14th); C. Buckingham, Oct. 15th; F. N. Sutherland, J. N. Bitton, Oct. 16th; W. G. Morris, W. R. Parkhouse, R. R. Bragg, Oct. 18th; W. C. Nelson, Oct. 19th; W. O'M. Bedard, C. R. Coulson, Oct. 20th; S. G. French, Oct. 21st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—A. D. Binnie, Oct. 15th; D. G. R. Lord, A. Dickenson, A. R. Rimmer, E. H. J. Davidson, W. G. Dunscombe, Oct. 21st; H. S. Greening, W. Taylor, N. W. McLellan, Oct. 22nd; G. H. Mitchell, G. J. Teather, J. Biggam, H. G. Ll. Williams, E. R. H. Pretlove, F. A. L. Addison, J. Turner, Oct. 23rd; F. L. Kay, G. R. Biggs, Oct. 24th; J. H. L. Cowin, Oct. 25th; H. J. Padfield, Oct. 26th; A. E. Warnes, Oct. 27th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—W. Melvin, July 20th; A. G. T. Wills, Aug. 3rd; S. S. Kirston, Aug. 10th; C. E. Sherwood, C. C. Stubbs, M. Segel, G. F. Sheard, H. H. Clarke, A. W. P. Clarke, H. Clayton, R. J. Green, A. S. Hartley, H. H. Jager, L. H. Jager, L. Jacobs, J. F. R. Johnstone, L. L. Locke, A. R. Murray, A. A. Moir, G. D. Nisbet, B. B. Nelson, J. E. E. Owens. W. M. Oosthuizen, G. Leslie, W. J. Pridgeon, K. H. Ridgway, V. O Reid, F. H. L. Tindall, J. Terry, C. W. Taute, W. H. A. Tedder, O. Wood. F. Wroth, T. G. Woodley, A. Waiggowsky, W. R. Norton, G. I. Murray, L. H. Paxton, Oct. 26th.

Sec. Lts. to be Sec. Lts. (K.B.), from (T.) :—G. J. Gawthorn, C. W Harrison, Oct. 19th.

Sec. Lt. C. Volk to be Sec. Lt. (K.B.), from Admin.), Oct. 19th.

The following are granted temp. commns as Sec. Lts. (K.B.) :—H. Beckett (Lt. E. Lan. R. (T.F.), and to be Hon. Lt., Sept. 24th; D. N. Drybrough (Capt., Arg. and Suthd. Highrs., T.F.), and to be Hon. Capt., R. M. Thomas (Sec. Lt., R.G.A., Spec. Res.), Oct. 8th; J. F. Scott (temp. Lt., R. Fus.), and to be Hon. Lt., Oct. 12th; H. Dillon (temp. Sec. Lt., N. Lanc. R.), Oct. 15th; C. H. H. C. Cook (Lt. D. of Corn L.I.), and to be Hon. Lt., H. M. Fulton (Lt., Nova Scotia R., C.E.F.), and to be Hon. Lt., A. G. Fleming (Lt., Sco. Rif., T.F.) ,and to be Hon. Lt., Oct. 17th.

Prob. Flt. Officer K. S. Rankin is granted a temp. commn. as Sec Lt. (K.B.), Oct. 12th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (K.B.) :—E. Brogan, H. H. Watts, B. MacNear, Oct. 12th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (Obsr. Officers) :—T. B. Howard, Oct. 13th (substituted for notification in "Gazette," Oct. 8th); B. G. J. Wood, Oct. 15th; B. Garrett, Oct. 17th (substituted for notification in "Gazette," Oct. 1st).

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers :) F. H. Pritchard (Capt., R.G.A.), and to be Hon. Capt., May 10th; F. D. Kilby (temp. Sec. Lt., R. War. R.), June 20th; V. O. Hillyard (Sec. Lt., Northd. Fus., T.F.), June 24th; W. J. P. Dicks (temp. Lt., N. Staffs. R.), and to be Hon. Lt., M. H. C. Slaytor (Sec. Lt., R Guernsey L.I.), Oct. 13th; E. B. Henderson (Lt., C. Ont. R., C.E.F.), and to be Hon. Lt., C. E. Oglesby (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt., S. C. Garner (Lt., R.F.A.), and to be Hon. Lt., D. Megson (Sec. Lt., K. Lpool. R., T.F.), W. A. Sabine (Sec Lt., Notts and Derby R., T.F.), L. G. Speck (Sec. Lt., Lond. R., T.F.), C. Ware (temp. Sec. Lt., Ches. R.), Oct. 15th; G. Davies (Sec. Lt., N. Lanc. R., Spec. Res.), Oct. 17th; J. H. MacKellar (Lt., Highd L.I.), and to be Hon. Lt.; C. H. Redhead (temp. Sec. Lt., Manch R.), T. W. Sheppard (temp. Sec. Lt., Tank Corps), J. W. Sinton (temp. Sec. Lt., R. Ir. Fus., Spec. Res.), Oct. 21st; P. Franklin (temp. Lt., R.O. York. L.I.), and to be Hon. Lt., J. S. Fletcher-Watson (Lt., R.G.A., Spec. Res.), and to be Hon. Lt.; W. H. Anderton (temp. Sec Lt., E. York R.); J. R. Bartlett, M.M (Sec. Lt., Bord. R., Spec. Res.); J. Hill (temp. Sec. Lt., W. York. R.); W. E. Hargreaves (Sec. Lt., R. Lanc. R., Spec. Res.); L. Smith (Sec. Lt., York. L.I.) (Oct 22nd); W. A. Ross (Lt., Sack. R., C.E.F.), and to be Hon. Lt.; C. L. Douthwaite (Sec. Lt., E. York R., T.F.) (substituted for notification in "Gazette," Oct. 8th) (Oct. 23rd); W. E. J. Bloodworth (temp. Sec. Lt., Leic. R., D. G. Hepworth (temp. Lt., W York. R.), and to be Hon. Lt., Nov. 3rd; W. R. Scutt (Sec. Lt., R. War. R., T.F.), I. H. Turkington (temp. Sec. Lt., R. Ir. Rif.), A. V. Owens (temp. Sec. Lt., York. L.I.), J. E. L. Thomson (Sec. Lt., Berks. R., T.F.), E. J. Sutter (temp. Sec. Lt., A.S.C.), Nov. 7th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—F. L. Roberts, F. T. Brown (Oct. 7th.).

The following Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—(Substituted for notification in "Gazette," Oct. 1st.).—G. O. Parker, A. Talbot (Oct. 7th) .

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp commns. as Sec. Lts.) (S.) :—A. W. Gain, J. A. M'Donald, T. B. Sedgwick, D. L. Townsend (Oct. 13th); T. L. Elliott, R. E. Cole (Oct. 16th); J. H. Taylor, H. P. Smart, S. G. Cook, J. Masterton (Oct. 18th).

The following Lts. relinquish their commns. on ceasing to be empld. :—G. B. Foster (Sept. 15th); Hon. Capt.) A. F. Smith (Capt., Ches. R., T.F.) (Oct. 15th).

Lt. K. W. Cocking relinquishes his commn., and is granted the hon. rank of Lt., Nov. 9th.

The following Lts. resign their commns. to resume their medical studies, and are granted the hon. rank of Lt. :—T. H. Herriott, G. S. Morgan (Nov. 9th).

The following Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs :—S. B. Cole, R. B. Donald, C. J. Devlin, and are granted the hon. rank of Lts. J. F. Good, and is granted the hon. rank of Lt. (Nov. 9th).

Sec. Lt. H. C. Petch relinquishes his commn. to resume his medical studies, and is granted the hon. rank of Sec. Lt. (June 13th). (Substituted for notification in "Gazette," Sept. 3rd).

Sec. Lt. W. V. Wright resigns his commn. (Nov. 9th).

The following Sec. Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs. :—J. E. Bain, D. D. Carcary, C. K. D. Fraser (Nov 9th).

The initials of Lt. W. C. Mead are now as described, and not as in "Gazette," Sept 20th.

The surname of Lt. (actg. Capt.) M. A. Newnham is as now described, and not Newman as in "Gazette," Oct. 15th.

Administrative Branch.—Lt.-Col. (actg. Col.) G. M. Griffith to be Lt.-Col., and to relinquish the actg. rank of Col. from (S.O.) (Nov. 6th).

Maj. G. B Rickards, M.C., to be Maj. from (A.) (Aug. 19th).

The following are granted temp. commns. as Majs. :—J. B. Batten, D.S.O. (Maj., R. Fus., Spec. Res.), and to be graded for pay as S.O., 2nd Cl., Grade 2, April 23rd; E. A. Noel (Maj., Lond. R., T.F.), April 1st.

The following are granted temp. commns. as Capts., and to be actg. Majs. while empld as Majs. :—J. S. Magrath (Capt. Sass. R.), P. C. Sucking (Capt. attd. R. Fus. (April 1st).

Capts. to be actg. Majs. while empld as Majs. :—T. Gash, E. L. Oliver, M.C (April 1st); G. R. Kevill-Davies (April 13th), W. M. Urquhart, M.C. (April 24th); T. J. Brampton (May 28th); E. C. Baker (June 1st); L. E. Claremont, R. B. H. Lechmore, V. Percy-Smith (Oct. 28th).

Lts. (actg. Capts.) to be temp. Majs. while empld. as Majs. :—R. H. W. Hope, M.C. (April 1st); G. W. Cox (May 22nd); A. E. Worrall, M.C. (June 1st); R. C. Green (July 21st); R. L. Briscoe, J. G. Lumsden, W. Watson (Oct. 28th).

Capts. to be graded for pay as S.O., 2nd Cl., Grade 2, and to be actg. Majs. while empld. as Majs :—S. M. Pearce (April 1st); N. A. Daniell (May 6th); F. Hill (July 19th).

Lts. to be actg Majs. while empld. as Majs. :—J. Abbott (May 5th); G. G. S. Fitzgerald, W. J. C. Kendall (May 29th.)

N. McArthur (Lt., Cam. Highrs., T.F.) is granted a temp. commn. as Lt., and to be graded for pay as S.O., 2nd Cl., Grade 2, and to be actg. Maj. while empld. as Maj. (April 26th).

The following are granted temp. commns. as Capts., and to be graded for pay as S.O., 2nd Cl., Grade 2, and to be actg. Majs. while employed as Majs. :—H. S. Blockey (Capt., S. Staff. R.) (July 18th); C. Hayes (Capt., Yorks. L.I., Spec. Res.) (July 20th).

The following are granted temp. commns. as Capts., and to be actg. Majs. while empld. as Majs. :—J. P. Larkin (temp. Capt., attd. K.O.S.B.) April 1st); E. R. Slaney (temp. Capt., attd. R. W. Kent R.) (April 15th).

The following are granted temp. commns. as Lts., and to be actg. Majs. while empld. as Majs. :—C. McK. McGavin (temp. Lt., attd. R. Scot. Fus.) (April 1st); Hon. F. O. H. Eaton, D.S.O. (Lt. Gren. Grds.), May 14th); P. Gurrey (Lt., Suff. R.) (June 4th); H. S. Quickett (Lt., R. Highrs., T.F.) (June 6th).

The following are granted temp. commns. as Capts. :—P. F. Ayrton (Capt., London R., T.F.), E. C. Baker (Capt. Lond. R., T.F.), A. H. Bruceker (Capt., Oxf. and Bucks L.I.). T. J. Brampton (temp. Capt., attd. K.R.R.C.), J. Crow (Capt. and Qrmr., Gen. List, T.F.), L. M. S. N. Conolly (temp. Capt., attd. Middx. R.), H. J. Evans (Capt., R. War. R.), W. A. Ecob (temp. Capt., Yorks R.), G. Goodwin (Capt. Suff. R.), (April 1st); F. Hill (temp. Capt., Gen. List), and to be graded for pay as Staff Capt. (May 6th); G. R. Kevill-Davies (Capt., D. Gds.), W. J King (Capt. R. Mun. Fus.), C. Mitchell (Capt. and Qrmr., Rif. Bde.), J. B. Morgan (Capt., Suff. R.), H. K. Pearce (Capt., Lond. R.), P. G. Pullon (Capt., Ches. R., T.F.), H. B. S. Stephenson (Capt., R. Muns. Fus., S.R.), W. M. Urquhart, M.C. (Capt., R. Sco., T.F.) (April 1st); A. Toomey (Capt. and Qrmr., Gen. List., T.F.) April 29th); J. G. Robinson (Capt., Lond. R., T.F.) (June 1st); H. W. Morgan (Capt., K.R.R.C.) (June 20th); H. T. Holdstock, M.C. (temp. Capt., York. L.I.) (July 2nd); A. Pantin (temp. Capt., North'd Fus.) (July 13th).

J. J. Metcalfe (Capt. and Qrmr., Gen. List) is granted a temp. commn as Capt. (May 30th, substituted for notification in "Gazette," Sept. 17th).

Capt. F. Fernihough, M.C., to be Capt., from (A.) (Oct. 30th).

Lts. to be actg. Capts. while empld. as Capts. :—G. W. T Pereira, from (A.), L. Tweedie-Smith (April 1st); (Hon. Capt.) R. C. Green (April 22nd); F. G. C. Fison, J. Hardy (May 21st), F. W. Young (May 28th); J. A. V. Duff (June 5th); N. H. Bartmann, R. S. W. Dickinson, D.S.O., J. Mitchell (June 6th); W. L. Collis (June 21st); F. B. Beddington (June 24th); J. A. S. Trydell (July 21st).

The following are granted temp. commns. as Lts., and to be actg. Capts. while empld. as Capts. :—L. E. Beales (temp. Lt., Norf. R.), Hon. F. W. Bampfylde (Lt., Devon R., Spec. Res.); W. H. T. Collings (temp. Lt., K.R.R.C.), R. Dewar (Lt., Unattd. List, T.F.), T. B. Duncan, M.C. (Lt., Sco. Rif.), P. H. Drake-Brockman (Lt., E. Surr. R.), P. Gurrey (Lt., Suff. R.), A. T. Gammon (temp. Lt., R. W. Surr. R.), A. B. Knapp-Fisher (Lt., Lond. R., T.F.), L. M. Martin-Jones (Lt., R.W. Fus.), E. Martin, M.C. (Lt., Lond. R., T.F.), H. T. Pemell (Lt., Middx. R., S.R.), R. B. L. Persse (Lt., Shrops. L.I.), F. J. Smith (Lt., and Qrmr., Spec. List), F. H. Sims (Lt., R. Fus.), K. S Sexton (Lt. W. Rid. R., T. F.), A. S. F. Tindall (temp. Lt., attd. K.R.R.C.), J. Watts, M.C. (Lt. R. Mun. Fus.), A. E. Worrall, M.C. (Lt., K.O.S.B.) (April 1st); A. C. Carter (Lt., Welsh R., T.F.), C. E. Collins (temp. Lt., K.R.R.C.) (June 1st).

O. C. McCaw (temp. Sec. Lt., Middx. R.) is granted a temp. commn as Sec. Lt., and to be actg. Capt. whilst empld. as Capt. (April 1st), and to be graded for pay as Staff Capt. (July 22nd).

R. H. Grey (temp. Lt., R. Fus.) is granted a temp commn. as Sec. Lt., and to be actg. Capt. whilst empld. as Capt. (Sept. 27th) (substituted for notification in "Gazette," Oct. 11th).

H. R. King (Capt., Dur. L.I.) is granted a temp. commn. as Le., and to be Hon. Capt (Aug. 8th).

Lts. to be Lts. :—J. W. Ferguson, from (O.), April 1st; W. A. M. Cox, from (A.), May 9th; T. Lethbridge, from (A.), Sept 12th; (Hon. Capt.) N. McL. Sanders, from (O.), Sept. 21st; A. Fowler, from (A.), Nov. 1st.

The following are granted temp. commns. as Lts. :—J. Abbott (Lt., Leic. R.), J. Arch (temp. Lt., attd. R. War. R.), F. B. Beddington (temp. Lt., attd. K.R.R.C.), H. E. Burrell (temp. Lt., attd. S. Staffs. R.), N. H. Bartmann (Lt., R. Highrs.), P. Cairns (Lt., R.F.A., T.F.), W. S. J. H. Coney (temp. Lt., attd. Dur L.I.), W. L. Collins (temp. Lt., attd. R. Fus.), A. E. Chilcott (temp. Lt., L'pool. R.), J. E. Dixon, M.C. (temp. Lt., S. Staffs. R.), R. S. W. Dickinson, D.S.O. (Lt., Cold. Grds., Spec. Res.), J. A. V. Duff (Lt., Rif. Brig.), R. N. D'O. Earwaker (Lt., Manch. R., T.F.), J. B. Edgar (Lt., R. Scots Fus., T.F.), W. H. Foy (temp. Lt., attd. Northd. Fus.), F. G. C. Fison (Lt., Suff. R., T.F.), S. F. Fooks, M.C. (Lt., Lond. R., T.F.), G. G. S. Fitzgerald (Lt., Dur. L.I.), R. C Green (temp. Capt., attd. Linc. R.), and to be Hon. Capt., S. G. Glover, D.C.M. (R. Ir. Fus.), J. Hardy (Lt., Notts and Derby R.), C. Jeffs (Lt., Mon. R., T.F.), W. J. C. Kendall, M.C. (temp Lt., attd. Lanc. Fus.), J. Mitchell (Lt., Highd. L.I., T.F.), F. Morton-Smith (temp. Lt., attd. York and Lanc. R.), W. Pilkington, M.C. (Lt., R.F.A., T.F.), W. A. L. Raeburn (temp. Lt., attd. R. W. Surr. R.), F. A. Rhodes (Lt., W. Rid. R., Spec. Res.), A. Reardon (Lt., Essex R., T.F.), W. C. Sharpe (temp. Capt., R. W. Surr. R.), and to be Hon. Capt., W. P. Trotter (temp. Lt., attd. R. Fus.), J. A. S. Trydell (Lt., Yorks. L.I.), A. L. Trainer (Lt., Lond. R., T.F.), C. W. Wright (Capt and Qrmr., Gen. List, T.F.), and to be Hon. Capt., G. S. Yeandle (temp. Lt., attd. Manch. R.), F. W. Young (Lt., Worc. R.), April 1st; R. F. Bradford (temp. Lt., attd. Dev. R.), L. G. Duff (Lt., R. Inns. Fus.), April 25th; A. G. Heap (temp. Lt., attd. K. Lpool. R.), May 14th; E. M. Gardiner, M.C. (temp. Lt., Lpool. R.), J. W. New (Lt., Middx. R.), May 22nd; A. W. Coulson (temp. Lt., Gen.

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List) ,E. F. Drake (temp. Lt. attd. Chts. R.), June 10th; H. J. Priestland (temp. Lt., N. Lanc. R.), June 24th; A. G. Bird (Lt., Lond. R., T.F.), H. T. C. Mesny (Lt., N. Staffs. R.), June 27th; W. C. C. Tower (Lt., R. E. Kent Yeo., T.F.), July 2nd; R. Hunter (temp. Capt., W. York. R.), and to be Hon. Capt., S. McGaw (Lt., Gordon Highrs., T.F.), July 13th; L. M. Y. Williams (Lt., Lond. R., T.F.), Aug. 3rd; J. A. Fiddes (temp. Lt., Ches. R.), Aug. 24th.

The following are granted temp. commns. as Sec. Lts., and to be actg. Lts. whilst empld. as Lts.:—T. Bullough (temp. Sec. Lt., R. Fus.), E. S. Clarkson (Sec. Lt., K.R.R.C., Spec. Res.), V. M. McMahon, M.C. (Sec. Lt., R. Ir. R.), E. P. Moxey (Sec. Lt., S. W. Bord.), W. J. T. Mardon (Sec. Lt., Glouc. R., T.F.), J. Nowell (Sec. Lt., Worc. R.), W. H. Nankivell (Sec. Lt., Essex R., T.F.), J. Rymer (temp. Sec. Lt., York. L.I.), B. W. Swan (temp. Sec. Lt., Worc. R.), W. Spink (temp. Sec. Lt., M.G.C.), G. E. Tune (temp. Sec. Lt., attd. York. and Lanc. R.), G. E. Valentine (Sec. Lt., Glouc. R., T.F.), April 1st; T. L. Davies (Sec. Lt., Drag. Gds.), April 25th; M. E. Dunham (Sec. Lt., Berks R.), May 13th; H. Salmon (temp. Sec. Lt., Yorks. R.), June 10th; A. E. Holton (temp. Sec. Lt., Rif. Brig.), F. V. Plant (temp. Sec. Lt., Rif. Brig.), July 2nd; T. J. M. Davies (Sec. Lt., Welsh R., Spec. Res.), W. F. Mackenzie (temp. Sec. Lt., Sco. Rif.), July 6th; H. W. L. Tottenham (temp. Sec. Lt., Rif. Brig.), July 13th; P. T. Bond (Sec. Lt., Linc. R., T.F.), July 16th; M. Poole-Connor (temp. Sec. Lt., K.R.R.C.), July 27th; J. Redmond, M.C. (Sec. Lt., R. Ir. R.), Aug. 3rd.

Sec. Lts. to be actg. Lts. while empld. as Lts.:—C. E. Haines, April 1st; H. T. Weston, May 22nd; S. U. Dent, June 10th; G. R. Neal, June 20th; E. A. Woods, July 1st; P. Fearnley, G. J. Mordaunt, Aug. 24th; (Hon. Lt.) A. R. Evers, from (O.), Oct. 12th.

H. D. Lumb is granted a temp. commn. as Sec. Lt., and to be actg. Lt. while specially empld., Nov. 4th.

Sec. Lt. (Hon. Lt.) W. Butler to be actg. Lt. while specially empld., Oct. 16th.

Sec. Lt. C. E. Haines (late R.F.C., Gen. List, on prob.) is confirmed in his rank as Sec. Lt., April 1st.

The following are granted temp. commns. as Sec. Lts.:—D. A. Recordon (temp. Lt., attd. K.R.R.C.), and to be Hon. Lt., July 1st; C. S. Marriott (temp. Lt., attd. Lancs. Fus.), and to be Hon. Lt., C. S. M. Weldon (temp. Sec. Lt., attd. Yorks. R.), July 12th; G. Deacock Oct 15th; A. H. Jackson, Oct 30th; W. N. Lancaster (late Lt., Aus. F.C.), and to be Hon. Lt., Nov. 1st; A. E. Chester, C. G. Kemp, Nov. 4th.

Lt. R. C. Vincent (Lt., Lond. R.) relinquishes his commn. on account of ill-health, Nov. 9th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—R. L. Low, F. Moss, T. T. Reeves, Nov. 9th.

The following Sec. Lts. resign their commns.:—W. B. Middleton, and is granted the hon. rank of Sec. Lt., A. W. S. Youngson, Nov. 6th.

Lt. H. M. Gibbon resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Nov 9th.

The following Sec. Lts. resign their commns., being physically unsuited for the duties of Pilots or Obsrs.:—G. N. Campbell, J. Davenport, Nov 9th; B. L. Levi, and is granted hon. rank of Sec. Lt.; F. W. White.

The date of appt. of Maj. (actg. Lt.-Col.) R. M. R. Lamb, D.S.O., is April 13th, and not as stated in "Gazette," Sept. 13th.

Technical Branch.—Maj. W. J. S. Lockyer to be Maj., from (Ad.), Oct. 25th.

G. K. Greig (Lt., R.N.V.R.) is granted a temp. commn. as Capt., Sept. 2nd.

Lt. W. Douglas to be actg. Capt. while empld. as Capt., Aug. 31st.

Lt. H. E. L. Pilbrow to be Capt., Nov. 8th.

Lts. to be Lts.:—R. Elcock, from (Ad.), July 18th; R. M. Knowles, M.C., from (Ad.), Aug. 6th; F. C. Elstob, from (O.), Oct. 16th.

Sec. Lt. (Hon. Lt.) G. F. Antill to be actg. Lt. while empld. as Lt., July 11th.

G. W. Hippisley (Lt., R.E., T.F.) is granted a temp. commn. as Lt., Oct. 10th.

The following are granted temp. commns. as Sec. Lts.:—H. McK. Barry, Oct. 19th; F. S. Rishworth, Nov. 6th.

Capt. H. E. L. Pilbrow relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Nov. 9th.

Lt. G. Shepherd (Lt., Oxf. and Bucks L.I.) relinquishes his commn. on account of ill-health, Nov. 9th.

Sec. Lt. (Hon. Lt.) H. V. Gray is removed from the Royal Air Force, Oct. 22nd.

The notification in "Gazette," Aug. 16th, concerning Lt. J. P. D. Maclagen is cancelled.

Medical Branch.—F. F. Muecke (temp. Maj., R.A.M.C.) is granted a temp. commn. as Maj., and to be actg. Lt.-Col. whilst empld. as Lt.-Col., April 1st, with seny. next below T. Haggerston (substituted for notification in "Gazette," May 28th.

The following are granted temp. commns. as Capts.:—G. C. Hall (Surgeon Capt., ret., I.M.S.), Nov. 4th; R. J. Aherne (late temp. Capt., R.A.M.C.), Nov. 7th.

E. T. McElligott is granted a temp. commn. as Lt., Nov. 4th.

The initials of Lt. N. L. Smallbone are as now described, and not as stated in "Gazette," June 28th.

Memorandum.—Lt. J. H. Thomson to be actg. Capt. (without pay and allces. of that rank whilst specially empld.), Nov. 8th.

War Office, Nov. 9th.

The following are among the Decorations and Medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign:—

His Majesty the King has given unrestricted permission in all cases to wear the Decorations and medals in question.

Decorations Conferred by His Highness the Sultan of Egypt.

Order of the Nile, 3rd Class

Brev. Lt.-Col. (temp. Brig.-Gen.) Amyas Eden Borton, D.S.O., R. Highrs. and R.F.C.

Order of the Nile, 4th Class.

Temp. Capt. Henry Ivan Hanmer, Gen. L. and R.F.C.
Lt. Ernest Andrew Mustard, Aus. F.C.
Temp. Capt. John Heron Storey, Gen. List and R.F.C.
Lt. Hugh Hamshaw Thomas, R.F.A. and R.F.C.

Conferred by His Imperial Majesty the Emperor of Japan.

Grand Cordon of the Order of the Sacred Treasure.

Lt.-Gen. Sir David Henderson, K.C.B., D.S.O.

FROM THE COURT CIRCULAR.

Buckingham Palace, Nov 11th.

The following officer was introduced into the presence of the King, when His Majesty invested him with the Insignia of the Most Honourable Order of the Bath:—

Military Division.—Companion.—Brig.-Gen. Robert Groves, R.A.F.

The King then conferred decorations as follows:—

The Distinguished Service Cross and Bar.—Capt. Ernest Cuckney, R.A.F.

Bar to the Military Cross.—Capt. John Aldred, R.A.F.

The Military Cross.—Capt. Edwin Bishop, R.A.F.; Capt. Harry Robinson, R.A.F.; Lt. Alan MacNab, R.A.F.; Lt. Ernest Maddox, Hampshire Regt., attd. R.A.F.

Admiralty Appointments.

The following appointments have been made:—

Nov. 7th.—Women's Royal Naval Service.—Asst. Prins.—Miss D. B. Gordon, to Newlyn Air Station.

Senior V.A.D.—Miss A. E. Cranmer, to Felixtowe Air Station.

OFFICIAL COMMUNIQUES.

MILITARY.

G.H.Q. Communiqués.

Nov. 5th, 7.59 p.m.—On Nov. 4th fine weather enabled our squadrons to maintain intense activity along the whole front, although a strong south-westerly wind hampered long-distance operations.

Co-operating with our attacking troops, our low-flying machines caused great havoc in the ranks of the retreating enemy with bombs and machine-gun fire, scattering his infantry, stampeding his horses, and ditching his guns and transport. In addition, the Headquarters concerned were kept informed of the movements of our troops and the dispositions of the enemy.

The valuable reconnaissance and photographic work which was accomplished, and the accurate observation of our artillery fire both by aeroplanes and balloons, had a share in the success of the operations.

Meanwhile, our bombing machines attacked important railway junctions and aerodromes. Many direct hits were observed on railways, and at one aerodrome, which was attacked from a very low altitude, three hangars were set on fire and destroyed. In all, nearly 33 tons of bombs were dropped during the day.

The enemy showed great activity in the air, and heavy fighting ensued. As a result, 40 of his machines were shot down and 15 were driven down out of control. Five German balloons were destroyed.

Thirty-five of our machines are reported missing.

Our operations were continued at night, and nearly 14 tons of bombs were dropped on important railway junctions and stations. Direct hits were seen to cause considerable damage. These operations were discontinued early, as the wind increased greatly.

Four of our machines failed to return.

Nov 6th, 8.6 p.m.—On Nov. 5th, in spite of low clouds and continuous rain, our machines in the battle area, flying at a height of about 100 ft., actively co-operated with our advancing troops, bringing back valuable information as to their movements, and reconnoitring the positions held by the enemy.

The roads, congested with traffic and infantry in close order, were attacked with machine-gun fire and bombs, and great confusion and heavy casualties were seen to be caused.

Over 8½ tons of bombs were dropped during these operations. There was practically no activity on the part of the enemy in the air. One hostile aeroplane which was encountered was shot down out of control.

Three of our machines are missing. No night operations were possible on account of weather conditions.

Nov. 7th, 7.58 p.m.—On Nov. 6th low clouds and continuous rain greatly restricted flying, but some of our machines succeeded in harassing the enemy's troops and transport with bombs and machine-gun fire, dropping over half a ton of bombs and causing casualties and damage.

There was no hostile aircraft activity.

Two of our machines are missing.

No night operations were possible on account of weather conditions.

Nov. 8th, 7.34 p.m.—On Nov. 7th, except for a very little low reconnaissance work, no flying operations could be carried out on account of driving mist and rain, which lasted all day.

Nov. 9th, 8.10 p.m.—On Nov. 8th low clouds and continuous rain again greatly curtailed operations. Some valuable low reconnaissance work was completed, the enemy's movements being observed and reported. Nearly three-quarters of a ton of bombs were dropped on the enemy's troops and transport.

No hostile machines were seen during the day.

One of our machines is missing.

At night the weather improved slightly, and some of our night-flying machines were able to attack important railway centres, dropping over 11½ tons of bombs with good effect.

All these machines have returned.

Nov. 10th, 8 p.m.—On Nov. 9th fine weather enabled our squadrons to maintain great activity along the whole front. A large number of photographs were taken and much valuable reconnaissance work was completed.

Our machines continued to harass the columns of the retreating enemy with bombs and machine-gun fire, delaying and disorganising his retreat, and returning with useful information. Our bombing squadrons also co-ordinated in the advance by attacking important railway centres with visibly good results. In all over 13 tons of bombs were dropped.

Considering the weather, the enemy's activity in the air was not great. In air fighting 12 German machines were shot down and seven were driven down out of control. One German balloon was shot down in flames.

Thirteen of our machines are missing.

At night our squadrons continued their activity, heavily attacking the important railway junctions of Liége, Louvain, and Charleroi, dropping 26 tons of bombs. Many direct hits were obtained on the permanent way, trains, and station buildings, and several explosions and fires were caused.

Two of our machines failed to return.

Nov. 11th, 8.32 p.m.—On Nov 10th our squadrons continued their work in fine weather, actively co-operating in the general advance and vigorously bombing the enemy's troops and transport. Over 2,000 photographs were taken and a great deal of valuable information was brought in by our reconnaissance machines. More than 19 tons of bombs were dropped during the day.

The enemy did not show great activity in the air. In air fighting 16 hostile machines were shot down and one was driven down out of control. In addition, two German machines standing on an aerodrome were destroyed by bombs dropped from a low altitude.

Nine of our machines are missing.

At night our bombing operations were continued. Louvain, Namur, Charleroi, and many other important railway centres were attacked with excellent results. In one case an ammunition train was blown up and fires and explosions were caused on the sidings in which it was standing.

In all over 20 tons of bombs were dropped.

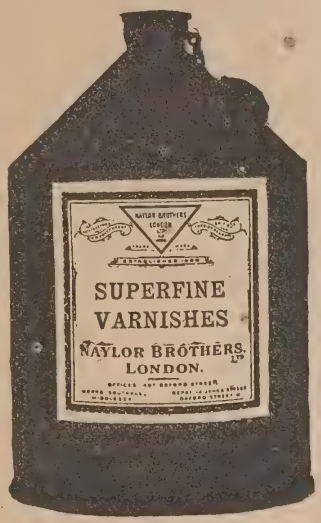
All our machines have returned.

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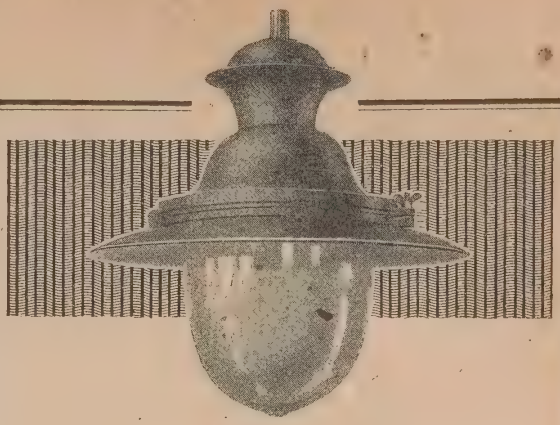


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AIR FORCE.

AIR MINISTRY COMMUNIQUÉS.

The following dispatches have been received from the Headquarters of the R.A.F. Independent Force in France :—

NOV. 6th.—During the past 24 hours mist and low clouds have been prevalent, and on the night of the 5th-6th there were also heavy showers of rain. In spite of these conditions, on the afternoon of the 5th our machines attacked a hostile aerodrome at Morhange, obtaining direct hits on the railway and the aerodrome. In the course of fighting, one E.A. was driven down out of control.

All our machines returned.

On the night of the 5th-6th our machines attacked the hostile aerodromes at Morhange, Frescaty, Dieuze, and Lellingen. Good shooting was obtained. A hangar was set on fire at Morhange.

All our machines returned.

On the 6th inst. Buhl aerodrome was heavily and successfully attacked. Large numbers of E.A. attacked our formations, and in the course of severe fighting three E.A. were destroyed.

Three of our machines are at present unlocated.

Nov. 7th.—In addition to the attacks already reported, our machines on the afternoon of Nov. 6th bombed the factories at Saarbrücken. One direct hit was obtained on the factory and one on the railway sidings, but other results could not be observed.

In the course of fighting, two enemy aircraft were destroyed and two more enemy machines were driven down out of control.

One of our machines is missing.

Also, in addition to the enemy aircraft reported accounted for yesterday, a further two machines were destroyed and one was driven down out of control.

NOV. 10th.—On the afternoon of the 9th inst. some of our machines, flying through clouds, carried out individual bombing raids on various railway centres some distance over the lines. These raids were very successful, and were without loss to us.

On the morning of the 10th inst. our squadrons heavily attacked the hostile aerodrome at Morhange. Bursts were observed on the near hangars.

All our machines returned.

NOV. 11th.—On the afternoon of the 10th inst., besides the raids already reported, our machines successfully attacked the railway junctions at Ehrange. Results could not be observed.

One of our machines is at present unlocated.

On the night of the 10th-11th inst. our machines attacked hostile aerodromes at Morhange, Frescaty, and Lellingham, and the railways at Metz-Sablon. Direct hits were obtained at Frescaty and exceptionally good shooting at Morhange, where ten direct hits on hangars were observed. Three large fires were started and very considerable damage done.

All our machines returned.

THE CASUALTY LIST.

NAVAL.

Reported Nov. 7th.

PREVIOUSLY REPORTED MISSING, NOW OFFICIALLY PRESUMED KILLED.—Flt. Lt. Lloyd A. Sands, R.N.

MILITARY.

Reported Nov. 6th.

AUSTRALIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Lockley, Lt. A. H., F.C.

CANADIAN FORCE.—WOUNDED.—Gillis, Capt. G. H., Can. A.P.C., attd. R.A.F.; McBride, Lt. A., W. Ont. R., attd. R.A.F.

Reported Nov. 7th.

The following officer, who was a prisoner in Germany, has arrived in Switzerland for internment :—

Green, Lt. W. H., King's (L'pool R.), attd. R.F.C.

Reported Nov. 8th.

AUSTRALIAN FORCE.—WOUNDED.—Barker, Lt. S. W. F.; Wright, Lt. E. W., F.C.

Reported Nov. 11th.

PREVIOUSLY REPORTED PRISONER IN BULGARIAN HANDS, NOW REPORTED RELEASED.—Rowan, Lt. A., K.R. Rif. C., attd. R.F.C.

CANADIAN FORCE.—WOUNDED.—Layton, Lt. D. M., W. Ont. R., attd. R.A.F.

MISSING.—Crane, Lt. J. W., Cent. Ont. R.; attd. R.A.F.

AUSTRALIAN FORCE.—WOUNDED.—Barkell, Sec. Lt. T. H., F.C.

MISSING.—Howard, Lt. F., F.C.; Kilsby, Sec. Lt. M. J., F.C.; Sims Lt. P. J., F.C.

CASUALTIES AMONG W.O.S., N.C.O's., AND MEN. THE DATES ARE THOSE OF THE OFFICIAL LISTS.

AUSTRALIAN IMPERIAL FORCE.

DIED.

OCT. 28th.—Walker 528 A. J.

NOV. 1st.—Nelson 3405 H.; McDonald 30280 D. C.

AIR FORCE.

Reported Nov. 7th.

KILLED.—Coons, Lt. J. W.
Gilchrist, Sec. Lt. A.
Matthey, Sec. Lt. S. E.
Peacock, Sec. Lt. T.

DIED OF WOUNDS.—Booker, Lt. C. S.
Pitot, Sec. Lt. M. L.
O'Hara-Wood, Maj. A. H.

MISSING, BELIEVED KILLED.—Topping, Sec. Lt. J.

WOUNDED.—Bennett, Sec. Lt. S. L.; Butler, Sec. Lt. A. H.; Collis, Sec. Lt. A. R.; Dunn, Sec. Lt. G. E.; May, Lt. G. T. C.; McHenry, Sec. Lt. F. L.; Proudlove, Sec. Lt. H.; Scottorn, Sec. Lt. J. V.; Soutar, Sec. Lt. E.; Tysoe, Sec. Lt. D. F.

MISSING.—Brain, Sec. Lt. W. J.; Dunn, Sec. Lt. M. W.; Evans, Sec. Lt. A. W. R.; King, Sec. Lt. P.; Mucklow, Lt. S. L.; Reynolds, Maj. L. G. S.; Saunders, Sec. Lt. J. O. R. S.; Simson, Sec. Lt. J. A.; Thomson, Lt. R. W. L.; Vernon, Sec. Lt. R. G.; Windover, Capt. W. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Ayrton, Capt. F. A.
Clack, Lt. L. A.
Flintoft, Lt. H. T.
Illingworth, Lt. C. F. W.
Jenkins, Sec. Lt. B. P.
Loupinsky, Lt. J.
Shell, Lt. W. H.
Smith, Sec. Lt. F.

PRISONERS OF WAR.—Steele, Lt. W.
Wesson, Sec. Lt. J. S.

Reported Nov. 8th.

KILLED.—Canning, Sec. Lt. E. H.
Connor, Sec. Lt. W.
Forrest, Lt. L. J.
Kelly, Sec. Lt. G. W. A.
Phillips, Sec. Lt. D. R.
Spinks, Sec. Lt. C. E.

DIED.—Deards, Lt. C.

WOUNDED.—Burbidge, Capt. L. W.; Carr, Lt. G. H.; Darroch, Capt. D. M.; Hesketh, Sec. Lt. A.; Holmes, Sec. Lt. J. A.; Loly, Lt. F. M.; Oliver, Sec. Lt. J. A.; Peer, Sec. Lt. H. E.

MISSING.—Collins, Sec. Lt. J. C.; Cresswell, Sec. Lt. R. N.; Pennal, Sec. Lt. H. L.; Reed, Sec. Lt. F. M.; Silk, Sec. Lt. R. W.; Sorley, Sec. Lt. J. T.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Hand, Capt. E., McN.
Sanderson, Sec. Lt. C. B.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR NOW REPORTED PRISONER OF WAR.—Crawford, Sec. Lt. W. I.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Gwyer Sec. Lt. N. E.; Hilton, Sec. Lt. T. R.; Taylor, Lt. R. E.

Reported Nov. 9th.

KILLED.—Barker, Sec. Lt. J.
Cook, Sec. Lt. M.
Edgecumbe, Sec. Lt. C. H.
Saunders, Sec. Lt. L. L.
Thomas, Lt. B. S. B., M.C.

DIED OF WOUNDS.—Forster, Sec. Lt. D.
Potts, Sec. Lt. G. J. L.

WOUNDED.—Brewer, Sec. Lt. W. M.; Bridge, Sec. Lt. A. J.; Chisholm, Lt. D.; Clark, Lt. M. J.; Fuller, Sec. Lt. A. H.; Heaton, Sec. Lt. B.; Netherton, Lt. E. C.; Whichelow, Sec. Lt. A.

MISSING.—Brown, Sec. Lt. G.; Bruce, Sec. Lt. A. P. C.; Coomer, Sec. Lt. F. H. V.; Gasson, Lt. F. A. B.; King, Sec. Lt. S.; Rath, Lt. H. C.; Smith, Lt. L. H.; Thomas, Sec. Lt. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONER OF WAR.—Jackson, Lt. W. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Harvey, Lt. G. S.
Heine, Lt. R. W.
Hill, Sec. Lt. G. A. R.
McCracken, Lt. E. C. J.
Metson, Sec. Lt. G. F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED INTERNED.—Cobham, Lt. R. L.
Gallagher, Lt. E. G.
Taylor, Lt. E. E.

Reported Nov. 11th.

KILLED.—Allen, Capt. D. G. A.
Donaldson, Sec. Lt. D. L.
Drummond, Sec. Lt. J. C. G.
Hadlow, Sec. Lt. A. L.
Russell, Sec. Lt. W. H.
Sawyer, Sec. Lt. C. H.

WOUNDED.—Adams, Sec. Lt. O. H.; Aulph, Lt. C. T.; Biddle, Sec. Lt. S. C. H.; Bourns, Lt. A. E.; Cope, Sec. Lt. W. N. L.; Grant, Sec. Lt. C. A.; Knott, Sec. Lt. C. R.; Till, Sec. Lt. E.; Whitfield, Sec. Lt. R.

MISSING.—Aitken, Sec. Lt. A. H.; Desy, Sec. Lt. J. R.; Haynes, Capt. G. C., M.C.; Lister, Sec. Lt. R.; MacLean, Sec. Lt. M.; Moir, Sec. Lt. A. E.; Pratt, Sec. Lt. A. A. R.; Rogers, Sec. Lt. T. H.; Thomas, Sec. Lt. D. U.

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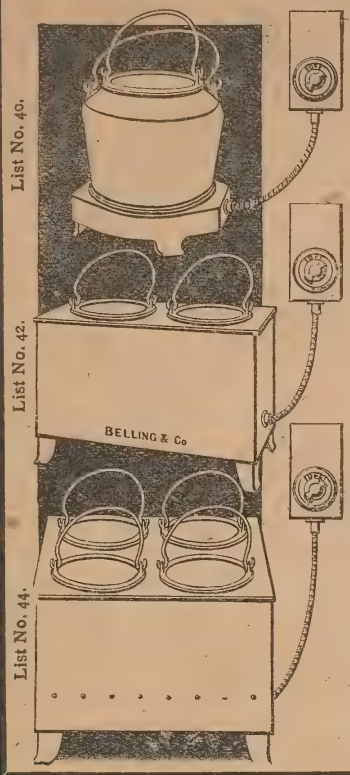
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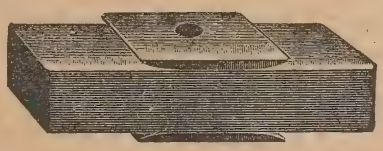
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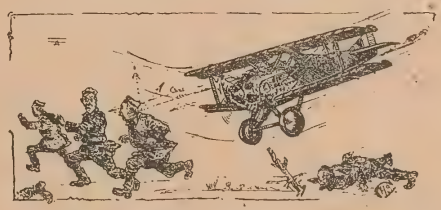


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PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—McDonald, Sec Lt. J. C. J.; Papenfus, Lt. M. T. S., D.F.C.; Papworth, Sec. Lt. A. S.; Pugh, Lt. J. A.

Reported Nov. 12th.

KILLED.—Carruthers, Sec. Lt. W. J.
Doolittle, Sec. Lt. C. M.
Lamb, Sec. Lt. H. J.
McChlery, Sec. Lt. J. M.
Raby, Sec. Lt. L. F.

DIED OF WOUNDS.—Gardenner, Sec. Lt. J. V.

WOUNDED.—Allan, Lt. A. W.; Bryant, Lt. E.; Firmin, Sec. C. A.; Foreman, Capt. J. W.; Harper, Sec. Lt. H. G.; Mignault, Lt. B.; Scott, Lt. A.; Wallis, Lt. C. R. A.; Whitburn, Lt. F.

MISSING.—Allan, Sec. Lt. C. M.; Greaves, Sec. Lt. N.; Hall, Lt. E. W. O.; Lewis, Sec. Lt. H. G.; Nash, Capt. T. W.; Orr, Lt. O. J.; Sanders, Sec. Lt. W.; Wareing, Capt. G. W.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Chalkin, Sec. Lt. W. J. N.
Courtney, Sec. Lt. W. E. L.
Davies, Sec. Lt. H.
Evans, Sec. Lt. W. D.
Fairhurst, Sec. Lt. A.
Guild, Sec. Lt. C.
Sykes, Lt. J. A.
Taylor, Sec. Lt. L. G.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Coles, Sec. Lt. G. T.

Reported Nov. 13th.

KILLED.—D'Albenas, Sec. Lt. P. D.
Bingham, Sec. Lt. R. G. A.
Doggart, Capt. N. A.
Rattle, Sec. Lt. L. C.

DIED.—Lloyd, Lt. L. B. E.

DIED OF WOUNDS.—Brown, Lt. G. C.

WOUNDED.—Clawson, Sec. Lt. D. V.; Glasson, Capt. G. W. T.; Gordon, Lt. R. McL.; Hagan, Sec. Lt. W. J.; Joseph, Capt S. C., D.F.C.; Officer, Lt. J.; Price, Lt. J. W. G.; Shaw, Sec. Lt. G. G.; Stead, Sec Lt. T.

MISSING.—Bayley, Lt. F. G.; Bridger, Sec. Lt. H.; Case, Sec. Lt. B. S.; Coleman, Sec. Lt. J. P.; Harrison, Sec. Lt. J. E.; Kelly, Sec. Lt. C. L.; Murray, Sec. Lt. H. G.; McLaren-Pearson, Lt. J.; Riffkin, Sec. Lt. R.; Ross, Sec. Lt. A. J. F.; Smith, Sec. Lt. N.; Stockwell, Sec. Lt. L. G.; Sutcliffe, Sec. Lt. G.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Baddeley, Sec. Lt. E. L.
Carlin, Capt. S.
Harrison, Sec. Lt. C. A.
Hyde, Lt. H. E.
O'Connor, Lt. O.
Parkinson, Lt. J. A.
Russell, Sec. Lt. G. C.
Sonecal, Sec. Lt. C. H.
Stockman, Lt. E. J.
Wright, Lt. E. F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Johnston, Sec. Lt. W. A.; Norcross, Lt. B

CASUALTIES AMONG W. OFFICERS., N.C.Os., AND MEN OF THE R.A.F.
THE DATES ARE THOSE OF THE OFFICIAL LISTS.

KILLED.

OCT. 5th.—Bowden 69642 3rd Cl. Air Mech. H. (Winsford); King 279823 2nd Cl. Pte. N. (Sevenoaks).

OCT. 6th.—Berry 252308 3rd Cl. Air Mech. S. A. (Bristol); Cook 28089 3rd Cl. Air Mech. A. (Clevedon); Phipps 94929 3rd Cl. Air Mech. J. J. (Birmingham); Dawson 160424 3rd Cl. Air Mech. F. (Stockport); Sargeant 107529 3rd Cl. Air Mech. H. (Market-Drayton); Wilkes 277302 2nd Cl. Pte. J. (Birmingham).

DIED OF WOUNDS.

OCT. 5th—Smith 5090 3rd Cl. Air Mech. W. (Cobham)

OCT. 6th.—Bond 135667 3rd Cl. Air Mech. G. (Colchester); Enticknap 139720 3rd Air Mech. J. (Dalston, N.E.); Hunt 37785 1st Cl. Air Mech. G. W. (Clapham Common).

WOUNDED.

OCT. 5th.—Barrett 11772 2nd Cl. Air Mech. S. (Oxford); Bell 20678 1st Cl. Air Mech. R. (Shewalton-by-Irvine); Bicknell 60702 3rd Cl. Air Mech. W. H. (Nuneaton); Davies 196032 2nd Cl. Pte. E. G. (Stoke Newington, N.); Dodds 99859 Serjt.-Mech. R. G. (Sheffield); Evans 58170 1st Cl. Air Mech. E. F. (Brentford); Hampson 110141 Serjt.-Mech. G. H. (Fallowfield, Manchester); Kemp 11857 1st Cl. Air Mech. W. J. (East Dulwich, S.E.); Martin 407240 1st Cl. Pte. J. H. (Bishop Auckland); Sargent 43977 1st Cl. Air Mech. J. (Peterboro'); Sell 11469 1st Cl. Air Mech. H. C. (Horfield, Bristol).

OCT. 6th.—Anderson 107606 3rd Cl. Air Mech. W. (Kilsyth); Carson 17324 Cpl.-Clk. D. (Ayr); French 53535 Cpl.-Mech. W. F. (Twickenham); Gibbons 160891 3rd Cl. Air Mech. W. A. (Guildford); Griffiths 287931 3rd Cl. Air Mech. T. (Tonypandy); Harris 67986 3rd Cl. Air Mech. A. (Bow, E.); Hill 221241 1st Cl. Pte. H. (Acton, W.); King 160295 3rd Cl. Air Mech. J. C. (Plumstead); Newman 56359 3rd Cl. Air Mech. M. G. (Peckham, S.E.); Pratt 286856 3rd Clk. F. H. (Manchester); Smith 29414 Cpl.-Mech. W. C. (Upper Tooting); Wilson 127190 1st Cl. Pte. W. M. (Edinburgh).

MISSING.

OCT. 5th.—Crites 98457 Serjt.-Mech. C. P. (Simcoe, Ontario, Canada); Mellor 99882 Serjt.-Mech. E. (Brighouse); Ovens 25013 1st Cl. Pte. L. C. (Parton, Wilts.); Stack 128313 2nd Cl. Pte. T. A. (W. Kensington).

OCT. 6th.—Proctor 212137 2nd Cl. Pte. T. (Belfast); Wilding 100000 Serjt.-Mech. J. (Warrington).

PERSONAL NOTICES.

NAVAL.

BIRTH.

STEEL.—On Nov. 3rd, at 71, Parkwood Road, Bournemouth, the wife of Brig.-Gen. J. M. Steel, R.A.F. (Capt., R.N.), of a son.

MILITARY.

DEATHS.

BARLOW.—Capt. Robin Tudor Barlow, R.A.F., previously reported missing and now killed in action or died of wounds on or about July 30th last, was educated at Southlea, Malvern, and Bradfield College, Berks. Born at Simla on Aug. 5th, 1890, he was the elder son of Mr. and the late Mrs. Robert Barlow, then of Delhi and afterwards of Bombay. Being in New Zealand at the outbreak of the war, he volunteered for service, and was enrolled in the 13th (Canterbury) Infantry Battalion. He sailed for Egypt in October, 1914, with the first New Zealand Expeditionary Force, landed in Gallipoli on April 26th, 1915, and was severely wounded a fortnight later (May 8th) in an attack on the Turkish position at Sedd-el-Bahr. About a year later, having been discharged from the New Zealand Army as unfit for infantry service on account of his wound, he applied for and obtained a commission in the R.F.C., and, going to the front in France in September, 1916, served first as observer and afterwards as pilot during the whole period of the Battle of the Somme. After being again wounded he was posted to the instructional staff at Winchester till recalled to the front on March 23rd last, serving as flight commander both in the retreat in March and April and in the early stage of the Allied forward movement in July, when he met his death.

BOWER-BINNS.—Lt. John Simpson Bower-Binns, Eastern Ontario Regt. and R.A.F., who died on Nov 6th at an aerodrome near London as the result of an accident, was the elder son of Mr. and Mrs. J. Bower-Binns, of 10, Castelnau Gardens, Barnes. He was 27 years of age.

DE BATHE.—Lt. Henry Michael de Bathe, R.A.F., was killed on Nov. 4th in a flying accident at the Flying School at Sleaford. He was the only son of the late Mr. Percy de Bathe and Mrs. de Bathe, of 85, Eccleston Square, S.W.1, and grandson of the late General Sir Henry de Bathe, Bt., K.C.B. Mr. de Bathe, who was in Australia when the war broke out, joined the Anzacs and served with them as a regimental officer throughout the whole Gallipoli campaign. He was given his command by General Sir William Birdwood, and served as a Staff officer with General H. R. Davis, Commanding the 11th Division. Returning to England, he transferred to the Royal Flying Corps, and he was acting as instructor in the Royal Air Force at the time of his death. He had already had a serious accident this year while flying. He was 29 years of age.

EDRIDGE-GREEN.—Lt. Henry Allen Edridge-Green, R.W.F., attd. R.A.F., who died on Nov. 5th at Castlemount Military Hospital, Dover, was the only son of F. W. Edridge-Green, M.D., F.R.C.S. He was 24 years of age.

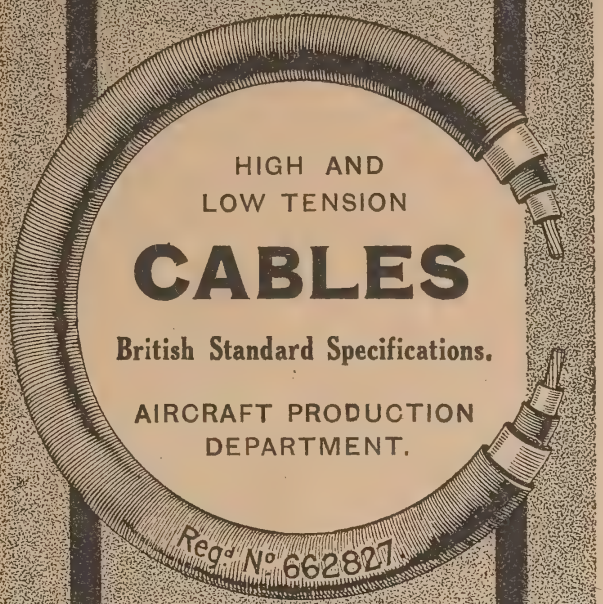
EVANS.—Lt. Arthur Frederic Evans, R.A.F. (late R.W.F.), who was killed in action on Oct. 30th-31st, was the younger son of Mrs. and the late Mr. Arthur F. Evans, of Fazakerley House, Prescot. He was 32 years of age

GOODMAN.—Lt. Gilbert Anthony Goodman, 10th Loyal North Lancs. Regiment, attd. R.A.F., who is reported to have been killed, was the only son of Mr. and Mrs. A. W. Goodman, of the Cloisters, Temple, and of Belvedere, Kent. Born in 1895, he was educated at Westminster, and shortly after the war broke out he enlisted in the U.P.S. Brigade, from which he exchanged into the Inns of Court O.T.C. He was gazetted to a commission in December, 1914, and shortly after was ordered to the French front, where he took part in several engagements. Owing to being mistaken for another officer of a similar name he was erroneously reported by the War Office as being killed, and a brief notice of his career appeared in "The Times" of April 20th, 1917. Some weeks later he received a serious flesh wound in the thigh while leading his men in a gallant, and then unsuccessful, assault on Greenland Hill, the plans for which he was understood carefully to have prepared. Being invalided home to England, he remained in various hospitals and convalescent homes until his recovery, and last spring he decided to join the Royal Air Force, and was gazetted on July 12th to a permanent lieutenancy in the Army, with seniority from September, 1915. After receiving the usual course of training for the Air Service and receiving his "wings" as pilot, he was suddenly ordered to the Italian front, and left on September 11th last for an unknown destination.

HAZELL.—Lt. Dudley Howard Hazell, R. Lanc. Regt., whose death was announced recently, was educated at Charter-

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house and Lausanne, passing into Sandhurst in June, 1914. He served in France in 1915, and later on at Salonika and in Egypt, and was on board the transport "Arcadian" last April when she was torpedoed. He obtained his "wings" in August, 1917.

HELM.—Capt. Henry Paul Dundas Helm, R.A.F., late Border Regt., who died on Nov. 6th at 13, Portland Square, Carlisle, was the eldest son of Dr. and Mrs. B. Dundas Helm. He was 24 years of age.

HITCH.—Lt. George Stuart Hitch, King's L'pool Regt., attd. R.A.F., who died on Nov. 9th at Alsoma, Grove Road, Wallasey, of pneumonia, was the third beloved son of Mr. Albert and Mrs. Mary Ada Hitch. He was 27 years of age.

HOCKING.—Lt. E. C. Hocking, R.A.F., son of Mr. Joseph Hocking, the novelist, has been killed in action. He was 22 years of age. He joined the Loyal North Lancashires as a private in Sept., 1914, and received his commission in December. He was wounded in the battle of the Somme, and after leaving hospital became A.D.C. to Gen. Johnson. He transferred to the R.A.F. last autumn.

HOPCROFT.—Lt. Peter Hopcroft, R.A.F., entered the Royal Flying Corps in March, 1917, and obtained his wings in August. In October, 1917, he was specially selected for heavy raiding machines, and was one of the first R.F.C. officers to bomb German towns. In December, 1917, he was recalled to act as instructor in this work, and was so employed for five months, and returned to France with his squadron in August, where he for some time acted as Flt. Commander. He met his death during a raid on Oct. 28th, at the age of 19. He was the eldest son of Mr. G. P. Hopcraft, of Southam, near Cheltenham

JOHN.—Lt. Wilbur Arnold John, Yeo., formerly attd. Intelligence Corps, latterly R.A.F., who was reported missing, is now known to have been killed in action on July 31st, was the younger son of Mr. and Mrs. Richard John, of Valparaiso, Chile. He was 23 years of age.

LETTS.—Capt. John Herbert Towne Letts, M.C., R.A.F., whose death was announced recently, was educated at Aldeburgh Lodge, Suffolk, Roydon Hall, Norfolk, and at Lancing, where he reached the Sixth Form, was a house captain, and in the football first XI, and school swimming team. He was also winner of the open quarter-mile race, held five house colours, and was Serjeant in the O.T.C. He went to Sandhurst, and in January, 1916, was gazetted to the Lincolnshire Regt. and the R.F.C. He went to the front in June, 1916, and again in March, 1917, and took part in the big air battle on April 6th of that year, on the conclusion of which he was promoted Captain and Flight Commander. On Easter Monday he took part in what was afterwards described by Mr. Boyd Cable as "one of the most gallant actions in the air he had ever heard of," when with one other machine he fought five Germans of the "Circus," and shot down two certainly, and it was believed three. Capt. Letts' observer was killed, and his machine shot to ribbons. On May 24th he, alone, attacked four German double-seaters, destroying two and driving the other two down, for which he was awarded the M.C., in the recommendation for which it was stated that "this officer has performed very good service, and has been responsible for driving down out of control at least four other hostile aircraft, and completely crashing two others. By his indomitable pluck and dash he has set a very fine example to the pilots and observers of his flight." On Aug. 22nd, 1917, he, with two other machines, intercepted and pursued eight Gothas returning from a London raid, the rearmost of which Capt. Letts engaged and damaged, and only drew off when 40 miles out at sea and off Zeebrugge, his observer being killed. His last commanding officer writes of him as "quite the soundest pilot I had, and that he could always depend on him to do not only the right thing, but also to do it in the right way." On Oct. 11th, while leaving an aerodrome some mishap occurred, and not having height enough to recover, he crashed, and was instantaneously killed.

LLOYD.—Lt. Lionel Bertie Eld Lloyd, Can. Cav., attd. R.A.F., who died on Oct. 12th of pneumonia, was the son of Mr. and Mrs. B. S. Lloyd, of Leighford Ranch, Midnapore, Alberta.

MORGAN.—Capt. John Towlson Morgan, R. Welsh Fus., attd. R.A.F., who was killed in action on Oct. 29th, was the eldest son of the Rev. E. A. and Mrs. Morgan, St. Andrew's Vicarage, Willesden Green. He was 20 years of age.

PAWSON.—Lt. George St. Vincent Pawson, M.C., R.A.F., who died on Nov. 6th at Sibton Park, Lyminge, of septic pneumonia following influenza, was the fourth son of the late Mr. William Hargrave Pawson, of Shoredan, Northumberland, and the Honble. Mrs. Howard, of Sibton Park, Lyminge. He was 28 years of age.

PINK.—Lt. Alan Luis Pink, Rifle Brigade, attd. R.A.F., who was killed in action on Oct. 30th, was the elder son of the late John Francis Pink and Mrs. Pink, of 37, St. Martin's Street, London. He was 20 years of age.

STREET.—Lt. Brooks Henry Street, the Welsh Regt. and R.A.F., who was accidentally killed on Aug. 6th while flying abroad, was the only son of Mr. and Mrs. F. F. Street, Colombo, Ceylon.

ROSE.—Capt. A. Winter Rose, M.C., Yeo., who died at Hastings on Tuesday, October 29th, was the youngest son of the late T. E. Rose and Mrs. Rose, of Abingdon Villas, Kensington. He was educated at the Bedford Modern School. Afterwards devoting himself to architecture, he won the travelling studentship of the Architectural Association and the Pugin medal and other distinctions. When war broke out he had a large practice at Westminster, some of his work being exhibited in the architectural section of the Royal Academy, and some being reproduced in the pages of "Country Life," "The Builder," etc. From 1907 he was captain of the Ealing Rugby Football Club, and was for some time considered one of the best forwards in the Eastern Counties' team. At the beginning of hostilities he obtained his commission in the Yeomanry, and devoted himself to recruiting and training. He went to France with his regiment in June, 1915, and was wounded at Monchy, where he won the M.C. Later he was appointed adjutant of his regiment. Returning from the front only this year to follow a Staff course, he was attached quite recently to an R.A.F. cadet school as instructor. Within a few days of taking up his new duties he contracted influenza, of which he died. He married in 1913 the only daughter of Mr. and Mrs. W. Foot Mitchell, of Quendon Hall, Essex, and leaves a widow and a daughter.

WILLS.—Lt. Oliver Byerley Walters Wills, R.A.F., M.C., who died on Nov. 10th, as the result of a flying accident in England, was the son of Mr. and Mrs. George Tarlton Wills, son-in-law of Professor and Mrs. H. Wildon Carr. He was 26 years of age.

Engagements.

BARRACLOUGH—WILSON.—An engagement is announced between Capt. John S. Barraclough, the Yorks Regt. and R.A.F., eldest son of Dr. and Mrs. Barraclough, 381, London Road, Lowestoft, and Kathleen Margret Wilson, W.R.A.F., only daughter of Mrs. Wilson, 60, Scarcroft Hill, York

GIBSON—SMITH.—The marriage arranged between Lt. H. K. Gibson, Northd. Fus., attd. R.A.F., and Eleanor M. Smith, will take place on Nov. 27th at the Parish Church, Henley-on-Thames, at 12. Friends will be welcome at the church.

MULCAHY-MORGAN—HEAPE.—The engagement is announced between Maj. T. W. Mulcahy-Morgan, M.C., R.A.F., third son of Mr. and Mrs. Mulcahy-Morgan, Roebuck Hill, Dundrum, Co. Dublin, and Barbara Mary Heape, only daughter of Mr. and Mrs. Walter Heape, King's End House, Bicester, and 10, King's Bench Walk, Temple.

O'DONNELL—FARMER.—The engagement is announced between Lt. P. J. O'Donnell, Canadians, R.A.F., eldest son of Mr. Joseph O'Donnell, Quebec, Canada, to Mary Edna, third daughter of Mr. and Mrs. J. Farmer, Great Hales Street, Market Drayton.

RICHARDSON—DEEDES.—A marriage is arranged, and will take place very shortly at Saltwood, between Lt. H. F. Richardson, E. Ontario Regt., attd. R.A.F., eldest son of the late Right Hon. H. W. Richardson, of Kingston, Ontario, and Marjorie Constance, daughter of Mrs. Deedes and the late Col. H. G. Deedes, of Saltwood Castle, Hythe, Kent.

WADE—PAYNE.—The engagement is announced between Lt. George Nugent Wade, Worcs. Regt., attd. R.A.F., second son of Mr and Mrs. H. S. Wade, of Beckbury House, Shrewsbury, and Marian Alice Payne, Asst. Admin., W.R.A.F., only daughter of Dr. F. Cobham Payne, of High House, Witham, Essex.

WATTS—PRESTON.—The engagement is announced of Capt. F. M. L. Watts, Worcester Regt. attd. R.A.F., third son of Mr. and Mrs. Francis Watts, Newton Abbot, South Devon, and Patricia, elder daughter of Mr. and Mrs. George Murray Preston, Wimbledon.

Marriages.

FRASER—HAMILTON.—On Oct. 1st, at the Military Chapel, Kasr-el-Nil, Cairo, Lt.-Col. C. Fraser, M.C., Prince of Wales (North Staffs) Regt., attd. R.A.F., was married to Volta Kathleen Hamilton, widow of Dr. Hamilton, of Cairo, by Lt.-Col. the Rev. H. C. Meeke, D.S.O.

RUSSELL—CRAKE.—On Oct. 29th, at the English Church, Cairo, Egypt, Bt. Lt.-Col. R. E. M. Russell, D.S.O., R.E., attd. R.A.F., second son of Mr. and Mrs. Russell, of Milford House, Limerick, was married to Dorothy Barrington, twin daughter of the late Maj. E. B. Crake, Rifle Brigade.

Births.

BYASS.—On Nov. 10th, at Stow Lodge, Gerrard's Cross, wife of Lt. R. C. Byass, Yeo., attd. R.A.F., of a son.

TALBOT-LEHMANN.—On Oct. 30th, the wife of Capt. Talbot-Lehmann, M.C., R.A.F., of a daughter

* * *

Mr. and Mrs. James Douglas regret that illness has prevented them from writing to express their gratitude to their friends, whose letters were so great a solace in their sorrow over the death of their son, Capt. Brian Douglas R.A.F. (late R.F.C.).

AIR FORCE.

Deaths.

BAUER.—Capt. David C. Bauer, D.F.C., R.A.F., who died on Nov. 3rd of pneumonia whilst abroad on active service, was the only child of the late Julius Bauer, and Mrs. Bauer, of Ruskin Manor, Denmark Hill, S.E. He was 28 years of age.

BROOKE.—Lt. Leonard Stopford Brooke, R.A.F., who was reported missing on Sept. 25th, is now unofficially reported killed in acton on that date. He was the elder son of Mr. and Mrs. Lesle Brooke, 14, Marlborough Hill, N.W.8. He was 23 years of age.

FINZI.—Obsr. Lt. Edgar Cecil Finzi, R.A.F., who was previously reported missing, is now reported killed in action on Sept. 5th while on patrol duty. He was the third and elder surviving son of the late John A. Finzi, of London, and Mrs. John Finzi, of Birkholt, Harrogate. He was 19 years of age.

GOODCHILD.—Lt. Victor George Goodchild, R.A.F., who died on Oct. 31st at a hospital abroad of pneumonia following influenza, was the only son of the late Mr. George Goodchild and Mrs. Brierly, Enys Road, Eastbourne, and the husband of Winifred Goodchild (née Norburn).

JONES.—Capt. the Rev. George W. Jones, R.A.F. (M.A., B.Sc., LL.B., F.R.S.E., F.R.A.S.), of 4, Basset Road, North Kensington, and Coraldene, Liberton, Edinburgh, died on Nov. 4th at the Central R.A.F. Hospital, Hampstead.

REED.—Sec. Lt. Alan Thomas Reed, R.A.F., of 19, Hillier Road, Wandsworth Common, died at Oxford on Nov. 1st as the result of an aeroplane accident.

THORN.—Sec. Lt. Harold Jarvis Cave Thorn, R.A.F., who died on Oct. 31st of wounds received on the previous day, was the younger son of Walter Thorn, 19, Great Portland Street, London, W.1. He was 20 years of age.

THWAITE.—Lt. Mendel Francis Thwaite, R A.F., who died on Oct. 28th, as the result of an aeroplane accident, was 19 years of age.

Engagements.

DALZELL-McKEAN—MAJEWSKA.—A marriage has been arranged and will shortly take place in Paris, between Capt. L. D. Dalzell-McKean, R.A.F., Hornsea House, Hornsea, East Yorks., youngest son of Hugh McKean, Dublin, and Mme. Elaine de Majewska, of Varsovie, Poland.

MURRAY—KELLER.—The engagement is announced between Capt. Dennis George Murray, R.A.F., eldest son of Lady Mary and Professor Gilbert Murray, of Oxford, and Phyllis Evelyn Keller, eldest daughter of Mr. and Mrs. L. E. Keller, of New Mount, Windsor Terrace, Hampstead.

Marriages.

GUNN—PHILP.—On Nov. 7th very quietly, at St. John the Divine, Bedford Hill, S.W., Capt. K. G. Gunn, attd. R.A.F., second son of Mr. and Mrs. George Gunn, of Ealing, was married to Florence Marjorie, second daughter of Mr. and Mrs. Frederick Philp, of 68, Manville Road, Upper Tooting, S.W.

MOSER—MOBERLY.—On Nov. 5th, at the Church of the Annunciation, Bryanston Street, W., by Rev. Bernard Shaw, Maj. George Reginald Moser, R.A.F., son of George Moser, of Kendal, Westmorland, was married to Gladys, youngest surviving daughter of William Henry Moberly, of Southampton.

YOUNG—TACHE.—The marriage of Capt. Ralph William Young, R.A.F., of London, England, son of Mr. and Mrs. W. E. Young, of Toronto, to Miss Adine Tache, only daughter of Mr. and Mrs. Jean Tache, was celebrated on Sept. 25th at the Archbishop's Palace, Montreal, by the Rev. Father McCrory.

COOK—NORMAN.—On Oct. 23rd, Sec. Lt. Ralph Cook, R.A.F., son of Mr. and Mrs. T. J. Cook, Brewers Hill, Dunstable, was married, by licence, to Mary (Peggie), daughter of the Rev. E. F. Norman, late vicar of Sutton-cum-Upton, and the late Mrs. Norman, and granddaughter of the late Honourable J. A. Erskine.

CROSIER—BIGGS.—On Nov. 9th, at All Saints' Church, Cleadon, Edward Theodore Crosier, R.A.F., elder son of Mr. and Mrs. E. J. Crosier, East Boldon, Co. Durham, was married to Hannah Tose, eldest daughter of Capt. and Mrs. Biggs, "Meadowlands," Cleadon, near Sunderland, by the Rev. R. P. Moorsom, Vicar.

WHITEHEAD—BINDA.—The marriage of Maj. Ralph Whitehead, R.A.F., and Signorina Francesca Binda took place at the Church of San Calimaro, Milan, on Nov. 4th. The clergy officiating were Monsignor Adrian Weld-Blundell and Monsignor Don Carlo Pelegrini. The bride was given away by her father, Cavaliere Carlo Binda, her witnesses being His Excellency Colonello da Porto, representing H.R.H. Vittorio Emanuele di Savoia, Conte di Torino, who, owing to the Italian offensive, was unable to be present, and her brother, Capitano Cesare Binda. Lt.-Col. Ralph Hope-Vere, R.A.F., was best man, the bridegroom's witnesses being Generale di Raymondi and Tenente Nobile Piero Prinetti Castelletti.

KNIBB—BALDRY.—On Nov. 2nd, at St. John's Church, Palmer's Green, Cadet Alexander Gordon Knibb, R.A.F., fourth son of Mr. and Mrs. F. G. Knibb, of New Southgate, was married to Lilian Baldry, only daughter of Mr. and Mrs F. Baldry, of Palmer's Green.

BARRINGTON—WARDROP.—The marriage of Mr. Claude

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Barrington, R.A.F., and Miss Violet Wardrop took place quietly on Nov. 5th, at Holy Trinity Church, Sloane Street. The Rev. Lewis Gilbertson officiated.

TAIT—D'AULAN.—On Nov. 5th, at the Château de Châteauneuf, near Grasses, Alpes Maritimes, Capt. Gerald T. Tait, R.A.F., was married to Ysabeau Josephine de Suarez, youngest daughter of the Marquise d'Aulan, and the late Marquis d'Aulan, formerly Deputy of the Drôme.

BIRTHS.

ATWOOL.—On Sunday, Nov. 3rd, at Lanrick, Percy Road, Boscombe, the wife of Lt. L. Courtenay Atwool, R.A.F.—of a daughter.

BEADLE.—On Nov. 6th, at Tollgate, Bearsted, Monica, wife of Capt. I. A. Neville Beadle, R.A.F., of a son

MILMAN.—On Nov. 4th, at 28, Harlow Moor Drive, Harrogate, Marjorie, the wife of Capt. Hugh Milman, R.A.F., of a son.

WHISTON.—On Nov. 5th, at Hawthorne Place, Woodbridge, to Kathleen, wife of Capt. J. R. H. Whiston, R.A.F.—a daughter.

* * *

Lt. Christopher Young, R.A.F. (Independent Force) was reported missing on July 20th. News has been obtained from Geneva that his observer was killed at Oberndorf on or about that date, but so far nothing has been heard of Mr. Young. Any information will be gratefully received by his wife, Mrs. Young, of 26, Mount Ephraim Road, Streatham, S.W.16.

FOREIGN COMMUNIQUES.

FRANCE.

Nov. 5th.—During yesterday our aerial reconnaissances enabled us to follow the retreating movement of the Germans. By day the bombing squadrons dropped over 38 tons of projectiles and fired 16,000 cartridges on the convoys and concentrations of troops. In the region of Vendresse-Raucourt, by night, 10¾ tons of projectiles were dropped on the stations of Mézières, Mohon, Lumes, Triage, Sedan, Poix, Terron, and Vendresse, in which bursts were observed.

It is confirmed that since Nov. 2nd Lt. Fonck has brought down six enemy aeroplanes, bringing the number of this pilot's victories to 75.

Nov. 6th.—During the day of the 4th our reconnaissance machines observed the retreat of the Germans. Our bombing machines dropped more than 38 tons of bombs and fired 16,000 rounds of ammunition on the convoys and troops in the region of Vendresse Raucourt. In the night 10,250 kilograms of bombs were dropped on the stations of Mezieres, Mohon, Lumes, Triage, Sedan, Poix, Terron and Vendresse, in which several hits were observed. It is confirmed that since Nov. 2nd the Lt. Fonck has brought down six enemy aeroplanes, which brings his total up to 75.

Nov. 7th.—The bad weather did not prevent our aviators from doing good work during the day of the 6th. Our machines worked in co-operation with our infantry, and attacked with bombs and machine-guns the retreating German columns. Fifteen and a half tons of bombs and 13,000 cartridges were used.

The unfavourable atmospheric conditions impeded the work of our aircraft. Despite the low clouds and the rain, our aeroplanes flew, sometimes at 50 metres, to watch the advance of our infantry, and in the regions of Chateau-Porcien and of the Chesne watched the enemy's movements on the roads and railways, and machine-gunned convoys of transport, infantry and batteries of artillery.

Nov. 8th.—During the fighting of the month of October our anti-aircraft defence force took an important part in the fighting against German aircraft. The mission of the latter was to cover the retreat of the enemy troops and to impede our advance. They showed themselves particularly aggressive, machine-gunning our infantry and our batteries. Thanks to the excellence of their shooting, their skill, and the vigilance of the personnel, our anti-aircraft formations largely contributed to levying a heavy price upon the enemy for his daring tactics. Thirty-five German aeroplanes were brought down by our posts and our auto-cannon, and four machines were so damaged that they were obliged to abandon their mission.

Special mention is due to the 68th Section of the auto-cannon of 66th Regt. of Artillery, over which a patrol of five Fokkers flew at a low altitude. A veritable battle ensued. The coolness of the gunners under a rain of bombs and machine-gun bullets enabled the gunners to bring down in a few minutes three machines, while a fourth, fleeing before a murderous fire, fell to the ground after being hit by the fire of a neighbouring section.

U.S.A.

Nov. 6th.—Our pursuit planes dropped a ton of explosives on several important road centres which were being used by the enemy to make his escape. Seven enemy aeroplanes were shot down during the day. Two of our machines are missing.

Nov. 8th.—During the day six additional guns of heavy calibre, many more machine-guns, 2,000 rifles, and a large aeroplane workshop captured during our advance west of the Meuse, have been reported. In the course of several successful enterprises near Lake Lachaussee, despite adverse weather conditions, our aviators, flying at a height of 100 metres, carried out a number of reconnaissance missions. They bombed and machine-gunned concentrations of enemy troops in the region of Baalon and Remoiville and blew up an ammunition dump at Gibercy. Four enemy balloons were destroyed and three aeroplanes were shot down during the day. One of our aeroplanes is missing.

BELGIUM.

Nov. 5th.—On Sunday a German aeroplane hit by our anti-aircraft artillery fell disabled in the enemy's lines.

THE WORK OF THE I.A.F.

During the month of October, despite the prevalence of fog and thick mists throughout the Rhine Valley (conditions likely to continue for several months to come) the R.A.F. Independent Force made 64 raids over Germany, exclusive of the numerous raids upon the German aerodromes at Frescaty, Lorhange, Buhl, Hagenau, Jametz, etc.

There were only 20 days in the month on which long-distance flights were possible. Only 11 these could be described as fair, and nine were highly unfavourable for flying operations. During the course of these raids upwards of 100 tons of bombs were dropped.

The following is a list of the important German towns raided (exclusive of aerodromes), showing the precise military objectives attacked, and the number of raids made upon each.

Town.	Military Objective Attacked.	Raids.
Metz-Sablon	Railway junction and triangle	25
Thionville	Railway junction	8
Mannheim	Chemical works and aeroplane factories	5
Saarbrücken	Factories and railways	5
Trèves	Railway station	3
Kaiserslautern	Factories and railways	3
Borbach	Blast furnaces	3
Offenburg	Railways	2
Frankfurt	Factories and railways, near	1
Coblenz	Railways	1
Worms	Chemical factories	1
Karlsruhe	Chemical factories	1
Sarreburg	Railway junction	1
Baden	Railways	1
Bonn	Railways	1
Mainz	Railways, near	1
Rombach	Blast furnaces	1
Pirmasens	Railways	1
	Total	64

The large number of raids on Metz-Sablon (25) is accounted for by the fact that the railway triangle is of exceptional importance to the enemy at the present time, when, apart from the question of supplies for the fighting lines, very large enemy forces are in rapid retreat towards the Rhine.

Photographs taken during recent raids show as many as 12 or 15 enemy troop and ammunition trains crowded into the southern arm of the triangle alone at one time. The permanent way, and the intricate network of crossings is extensively damaged almost daily by the British bombing expeditions carried out against the junction, thus necessitating the constant employment of large repair gangs, and causing serious delays to the enemy's transport.

For similar reasons the important enemy junction at Thionville has been repeatedly attacked.

COMPARATIVE LOSSES.

One thousand and seventy-five aeroplanes were reported down on all the battle fronts in October, as compared with 1,142 in the previous month. In addition, 104 observation balloons were destroyed against 171 in September.

The details of the air successes are as follows:—

American.—94 Germans destroyed; 18 American missing.

Belgian.—One destroyed.

British.—396 destroyed or captured; 128 driven down out of control; 209 British missing.

French.—218 destroyed or put out of action

Italian.—British: 24 destroyed, seven driven down out of control, 13 British missing. Italian: 16 destroyed

German.—191 Allied machines shot down.

THE DEATH OF COL. MERRITT.

The "Times" Toronto correspondent cabled on Oct. 29th:—29th:—

Colonel William Hamilton Merritt has died from influenza. He was President of the Aero Club of Canada, and had been active in stimulating the Canadian Air Service since the war began. He served through the North-West Rebellion and the South African War.

A GALLANT CANADIAN.

Canadian Headquarters announces that the officer who, though desperately wounded, fought 60 enemy machines single-handed, destroying four and bringing down six, is a Canadian, Major W. G. Barker, D.S.O. (with two bars), D.F.C., M.C. (and bar), and Italian Cross of Honour.

Maj. Barker, who is reported dangerously wounded, came overseas with a New Brunswick unit.

INOCULATION AGAINST INFLUENZA.

As a result of a conference of experts held recently at Adastral House, the Air Ministry have circularised officers and other ranks at the Ministry offering them the opportunity of trying the experiment of inoculation with anti-influenza vaccine.

Two injections, at an interval of 10 days, will be given, under the skin of the upper arm. The reaction following inoculation will, it is expected, in the majority of cases, be trivial or non-existent, but it is considered to be of importance that a period of from 24 to 36 hours light duty should be given after each inoculation. No one suffering from acute catarrh or in the early stages of influenza is to be inoculated.

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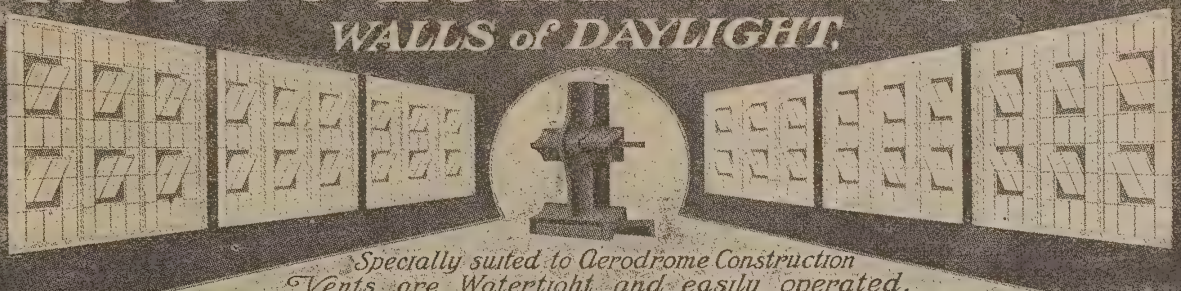
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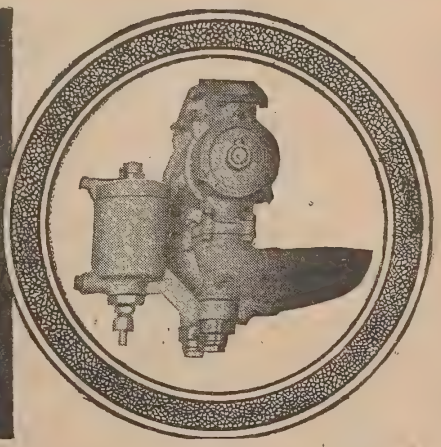
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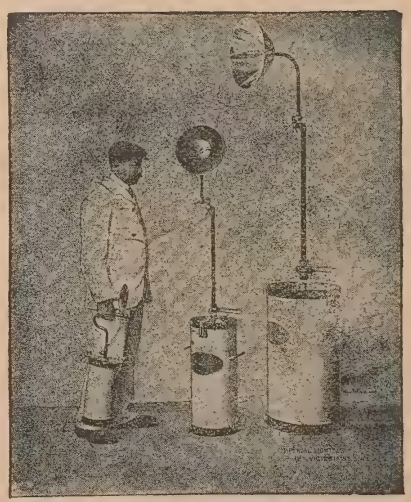
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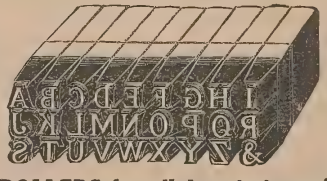
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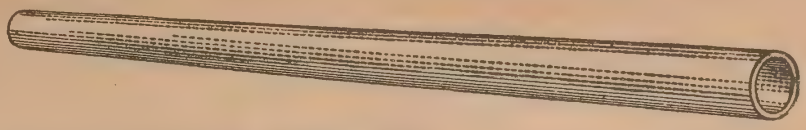
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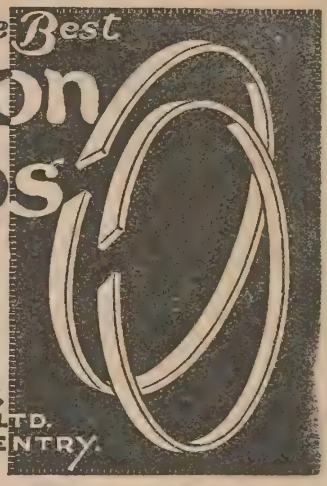
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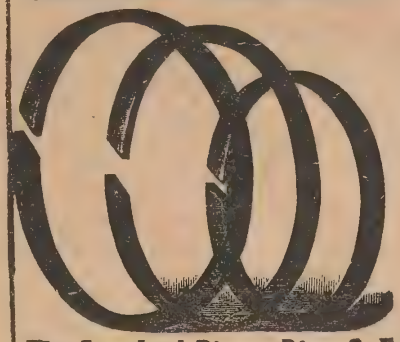
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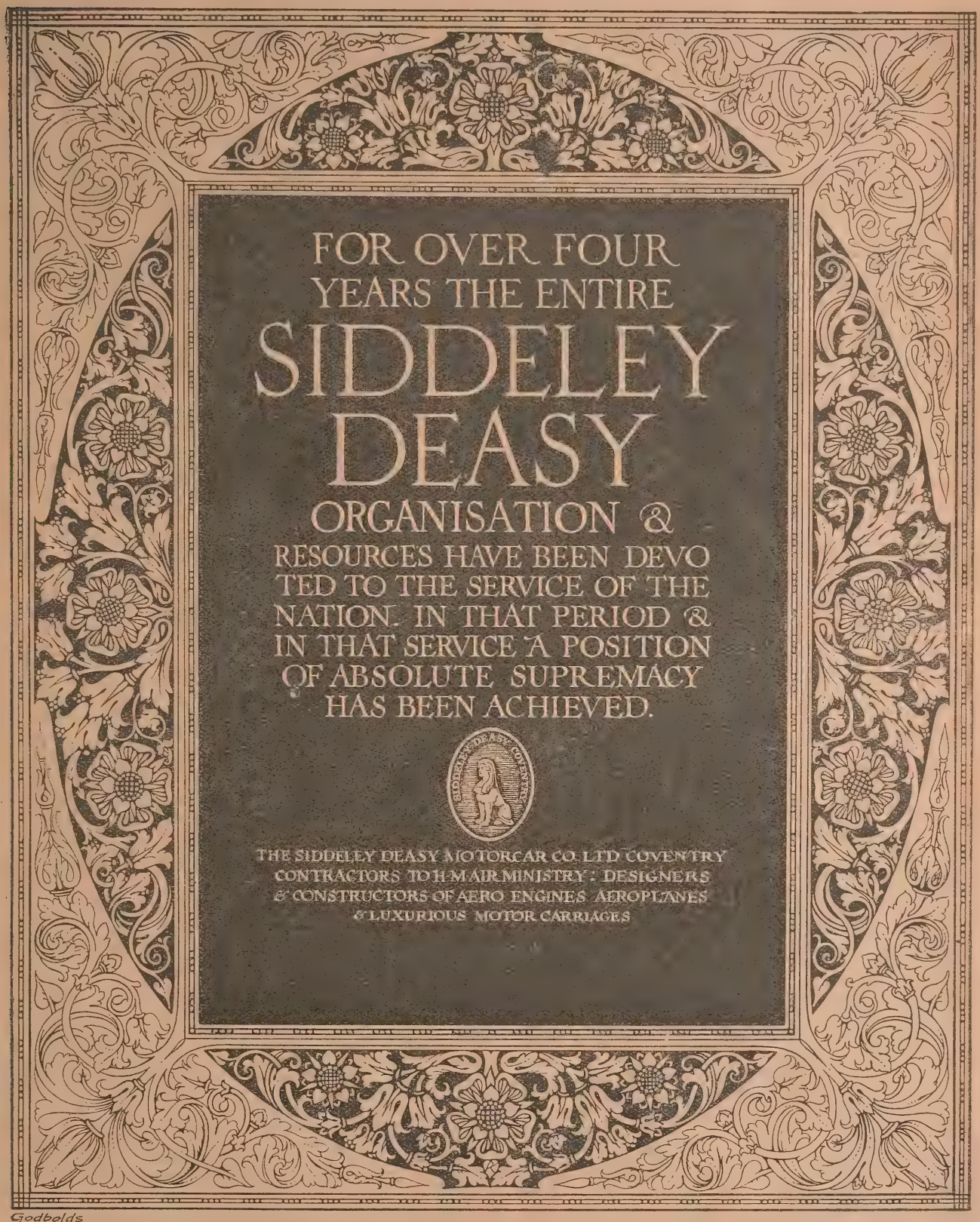
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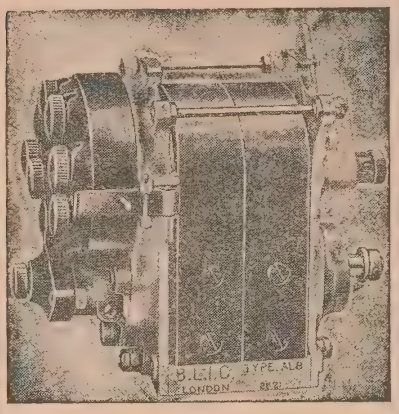
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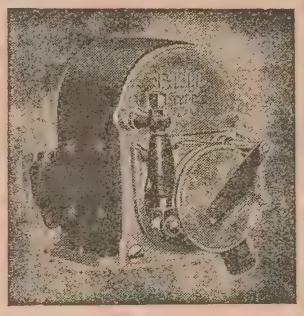


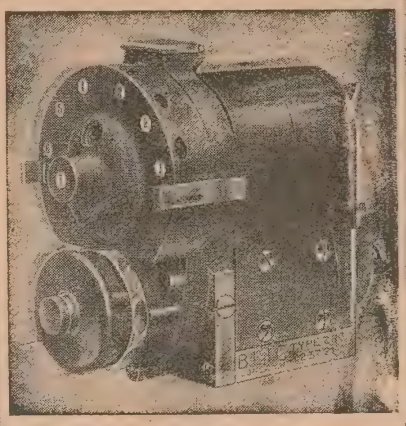
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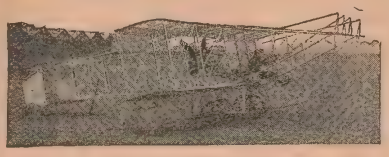
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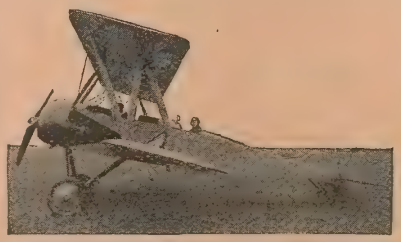
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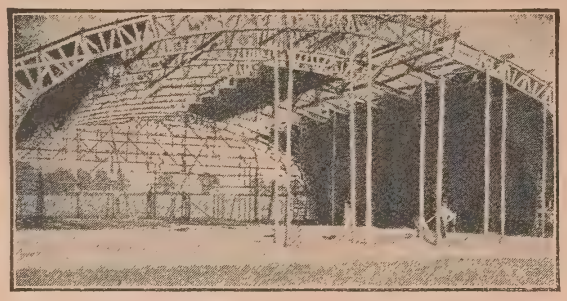
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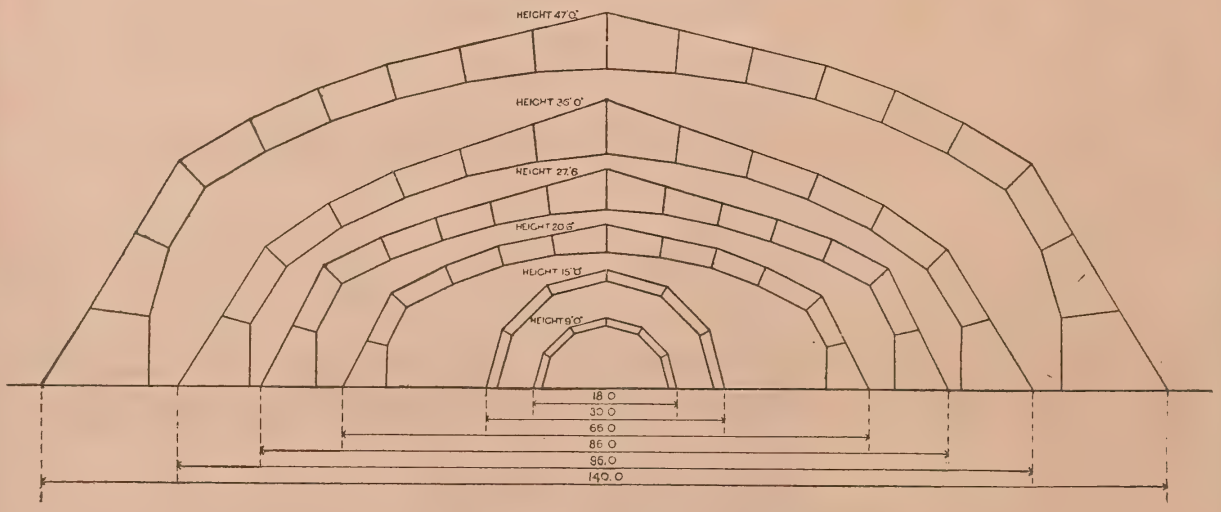
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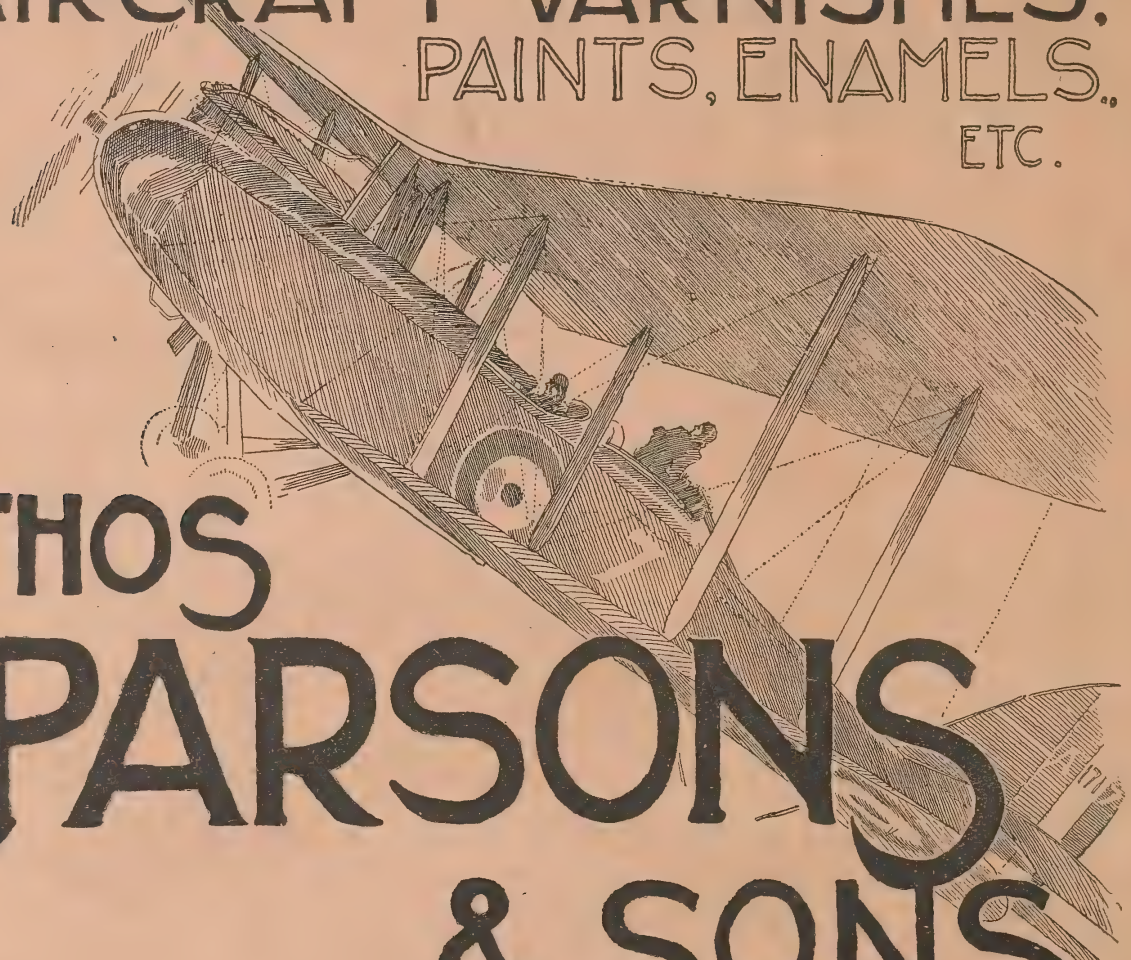
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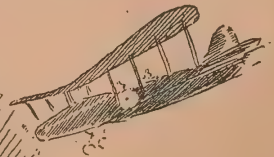
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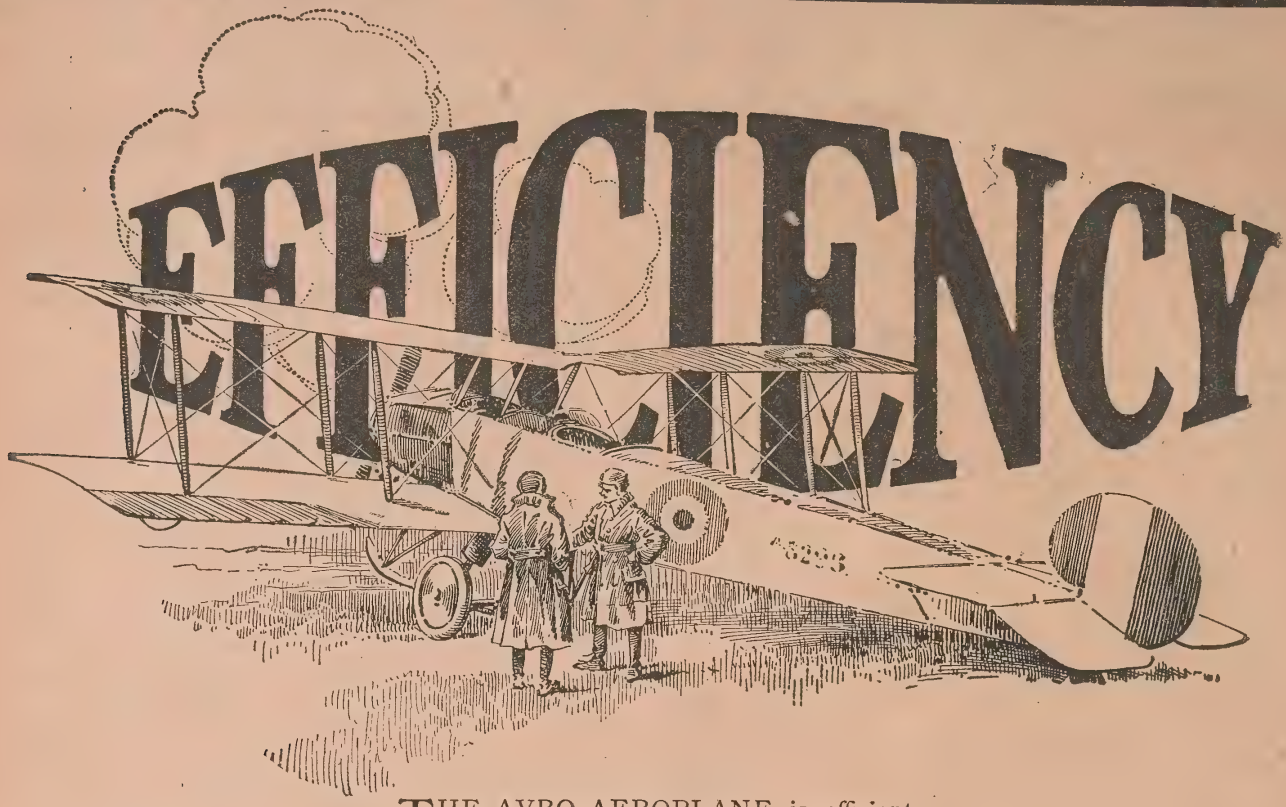
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ON THE NEXT THINGS TO HAPPEN.

Now that our Mr George and his friends are so busy "making the world safe for bureaucracy"—as a witty writer in the *Star* put it the other day—it behoves those of us who are interested in aviation to watch very carefully the next things to happen, assuming that serious aerial war is over and that all the Royal Air Force has to do is to provide communication squadrons for the Army of Occupation and to go ground-strafing against occasional Bolshevik mobs.

It is easy enough to see the future of aviation twenty or thirty years hence, when we shall have aerial passenger lines all over the world, and when every young man of what was the equestrian class will fly a sporting aeroplane just as naturally as his forefathers hunted. Any fool can take "daring glances into the future," in the manner of the hack journalist, just as it was perfectly easy when the Wrights first flew to prophesy about the hundred-mile-an-hour aeroplane and the havoc to be caused by bomb-dropping.

The old tag that "it is only the first step which is costly" might well have as an appendix another to the effect that "it is only the next step which is difficult." We saw the Wrights fly, and we could imagine the performance of the aeroplanes of ten years later, though we could not visualise the machines themselves nor their step-by-step development.

We did not imagine the Gnôme engine, which made it possible for any old thing remotely resembling an aeroplane to stagger off the ground. We did not see the next steps forward, the Farman biplanes (Henry and Maurice) of 1911, which were the first real touring machines; nor the 1911 Avro, the first successful tractor biplane; nor the Sopwith "Tabloid," nor the Koolhoven-Béchereau Deperdussin, with its 130 miles an hour, of 1913, which were the first real speed machines. Nor did we foresee the fast two-seaters of 1916-17 such as the Barnwell-Bristols and the de Havillands, nor the multiple-engined, multi-seated passenger machines such as the Handley-Pages and the Porte boats. Yet they were all clear successive steps.

Matters of Course.

To-day we regard speed machines which do 150 miles an hour and passenger machines carrying between 20 and 40 people as a matter of course. True, we are all very pleased that Mr. Handley-Page should have brought another world's record to this country with his machine which on Friday last—incidentally Mr. Page's birthday—lifted 40 passengers and a pilot to 6,500 feet. And possibly Berlin is equally pleased that, owing to our usual habit of muddling through, the machines for such a feat were only ready after the Armistice, instead of being produced in quantities a year ago, as they might have been, so that the persuasive bomb might have been carried in quantities instead of the human joy-rider in bulk.

But here we have merely another step forward, which enables us to visualise still more clearly the "aerial liner" of the future. What we really want to know is the precise next step between to-day, when there is no useful flying of any account—war-flying being over and done with for the time being—and to-morrow when these aerial liners are as common as motor-buses, or, at any rate, as common as railway trains.

Our Native Genius.

Lord Weir, who has deservedly won the reputation of being not only a keen and far-sighted business man, but a firm believer in the future of aviation, has on various occasions—the latest being on Friday last—borne public witness to the faith that is in him in the ability of British aeroplane and aero-engine designers. It is indeed fortunate that we have him as our Air Minister at this critical period instead of merely a politician with a military title who is capable of announcing, as one such did, that the "best brains" in the world, so far as aeronautics were concerned, were concentrated in Government employment, leaving it to be inferred that the mere Trade designers were of no account.

That insane belief cost us very many valuable lives in the early days of the war, because the R.F.C. was then mounted on these precious Government aeroplanes, which were shot down in heaps, while far better machines were lying about, or flying about, at home unable to obtain a single order. It is just as important that our bureaucrats should not be allowed to contract the idea that all the aeronautical brains of the world are concentrated in a few firms.

Limitation of Types.

Limiting the new types of machines which are officially adopted—either for war or civil service use—to the designs of a few firms is only a trifle less dangerous than limiting them to the designs of one Government aircraft establishment.

Limitation of this sort may be very pleasing to the bureaucrat when he sits in a Government office and, as the late W. S. Gilbert said, "like the fountains in Trafalgar Square he plays from 10 to 4," as doubtless he will do in peace-time. A limited number of types means much less trouble for him, but it also means fewer steps forward in that progress which is so necessary to this country if our Civil Service Air Fleet of the future is to assure to us that Command of the Air which will be forbidden to our Royal Air Force under the League of Nations and universal disarmament of which our vote-cadging politicians prate so glibly to-day.

Opportunism.

It is evident that so long as we are governed by opportunist politicians, such as our Mr. George and his gang, we shall never have a militant Air Fleet worthy of this

Empire, and we shall only retain our pre-eminence in the air by camouflage. It was once said of the late John Redmond, when, after a meeting of the Nationalist Party in Dublin, he suddenly reversed his policy, "Mr. Redmond is one of those who believes that the duty of a leader is to lead—even in retreat." How much more may we expect a reversal of policy by Mr. George, who has always held his job by being cute enough to see which way the cat was going to jump and being nimble enough to jump in front of it.

If Mr. George's former friends of Limehouse and district appear in the majority at the forthcoming General Election, then we may expect a semi-Bolshevik Government with Mr. George at its head—for one may be sure that he will never lose his job through loyalty to principles of any kind. In such an event we may give up all hope of seeing any private enterprise in aeronautics for many years to come. The only hope then will be that the rags of the Royal Air Force may continue as a postal service, to be developed again into a fighting force when the nation returns to sanity—if not then too late.

If, on the other hand, we have another example of that appalling thing, a Business Government—again with Mr. George at its head—we shall see our Navy and Army and Air Force cut down to nothing, because the business men in the Government will be keen on reducing expenditure so as to reduce taxation and increase their own graft and profits. But, by way of compensation, the Aircraft Industry may be allowed freedom to work out its own salvation in open commercial competition.

Free Competition.

This, after all, might be the best thing for future progress, for it would sift out the weak and badly managed firms, the mere gas-bag boomsters would burst, and the Industry would settle down onto a solid basis of well-managed firms run on far-sighted principles. It would mean a very thin time for everybody during the weeding-out period, but the results would be worth the pain.

Free competition, unhampered by official technical "experts," would in time assure to this country an easy lead in aeroplane and engine design, and, though lack of Government orders would mean practically no output for a year or two, we should be in the front with our new types when the demand actually arose.

The Next Steps.

Meantime, how precisely are we going to arrive at the next steps? It is, in the first place, to be hoped that, whatever kind of Government we may have after the Election, Lord Weir will remain Air Minister, for he is the only prominent public man who can not only visualise the vast developments of the aeronautical future, but can comprehend the details of to-day's aircraft and their uses and limitations.

It is perfectly evident that even Lord Weir, with all his faith and enthusiasm, will not be able to persuade any post-war Government to let him keep the Royal Air Force at its present strength. In truth, if we had any honest statesmen at the head of affairs they would realise that the R.A.F. to-day is just of a convenient size to form the nucleus of the Aerial Fleet for our next war—a race war against the Russians and their yellow relations, and not a mere clan-fight between Teuton and Latin tribes, as is this war. But the idea of keeping up any fighting force after Peace is declared is simply absurd, whether our next Government be Business or Bolshevik.

If justice were ever done in this world, our next Government would be a Military Government. But that is frankly an impossible idea, though, if such a miracle ever happened, one is perfectly sure that Mr. George would come out as an ultra-militarist, and would walk arm-in-arm down Whitehall, *coram populo*, with Sir Douglas Haig—if he were permitted to do so. Which idea is as absurd as is the idea of an adequate Air Force after the war.

An Official Air Post.

There is, however, just a possibility that so keen a brain as Lord Weir's may be able to persuade the Government of the future to establish a great international and inter-Imperial system of air posts, and to vote handsome sums to its maintenance. Such a proposition would naturally appeal immensely to a Business Government, for your Commercial Magnate is always ready to spend somebody else's money and risk somebody else's life in order to increase his own profits. Witness, for example, the conditions of life and pay on our merchant ships, and the tricks which are played with their finance.

Therefore, by obtaining the largest possible vote for a Naval and Military Air Force, and another vote for the Civil Service Air Force, Lord Weir might be able to get enough money to hold together a decent little force which will be of some practical use when war next begins. Otherwise, of course, we shall be absolutely at the mercy of our Slav enemies.

The I.A.P.

Between the reduced R.A.F. and the Imperial Air Post, or I.A.P., as one may call it, there might be a chance of employment for a fair number of pilots and other officers, and there might be enough orders for new aeroplanes to keep a corner in each of the best aircraft factories going until civilian aviation really begins. Incidentally, I.A.P. would not be bad initials for the new aerial postal service, because when the machines and land and sea transport vehicles were wanted for war work it would be so easy to paint out the front of the P. and make the letters into I.A.F., which would stand for Imperial Air Force.

Necessary Delays.

But, before our all-the-world-over air posts can come into operation, all sorts of delays must necessarily occur. Nothing at all can be done till the Peace Treaty has actually been signed, and that may well be six months hence.

After that there must be further conferences between all nations to make agreements concerning international flying rights, Customs arrangements, and so forth. Such conferences may well cover another year, judging by the very deliberate deliberations of our own Civil Aerial Transport Committee, which has sat for something like two years and so far has not even hatched out a preliminary report.

And when all that is done, there still remains the organisation of aerodromes and so forth, which will be a long job so far as the official air lines are concerned, though one imagines that go-ahead people like Mr. Holt-Thomas, Mr. Handley-Page, and Mr. Sam Waring will have all the matériel and personnel for their commercial aerial transport lines ready long enough before it is possible to use them. Still, one has said enough on this point to show that the next, and first, step in international aerial transport is still quite a long way ahead.

Private Flying.

It seems probable that the first step after the finish of war flying will be made by private individuals, unless, of course, a Bolshevik Government prohibits flying as being the sport of the idle rich, or unless a Business Government refuses to lift the existing embargo on private flying, because there is no graft for Government officials to be got out of private aeroplanes.

By courtesy of the Chief of the Air Staff and of the G.O.C. R.A.F. in the Field, one had the good fortune

to spend a week with the R.A.F. in France during the very last days of the fighting, and, though one is debarred for the present from writing of the military side of the R.A.F. as one saw it, one may perhaps venture to say that practically everyone to whom one spoke, whether at headquarters or at the most advanced squadrons, was intensely interested in the future of flying after the war. And the most remarkable thing was the obvious intention of all who could afford to do so to keep a private aeroplane.

The Desire to Fly.

The man who is in the habit of covering anything between 100 and 180 miles in the hour, according to the wind, is not going to be content with a mere 30 miles in the hour on the road, nor with 50 miles on rails. Also, there are hundreds of thousands of people in this country, of all ages and both sexes, who are desperately desirous of flying, if only for the sake of being able to say that they have had a trip in an aeroplane. Of these, some tens of thousands at least will desire to fly frequently, and so there will be plenty of passengers for those pilots who can afford machines—if they are permitted to use them.

If permission is given promptly, and if the Air Ministry acts sensibly, it ought to be possible to get rid of a good many hundreds of the thousands of obsolete or obsolescent aeroplanes and engines which are cumbering almost every storage hall in the country. Which would help to pay for the war and would be better than burning some millions of pounds' worth of aeroplanes, as will have to be done if some such course is not followed.

A Ready Market.

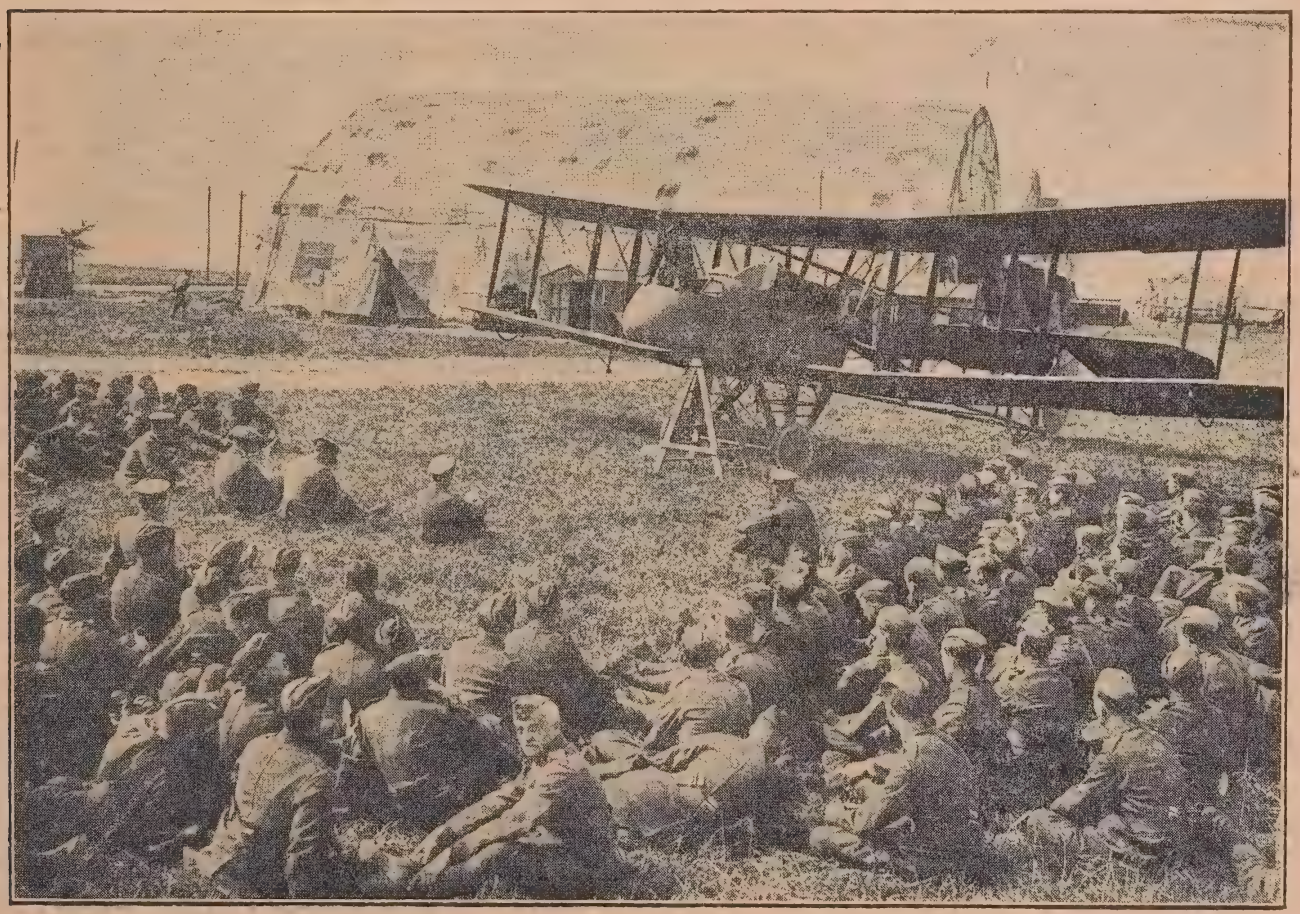
If pilots who want to leave the R.A.F. and start out on their own accounts are released quickly and are given the use of aerodromes near big towns and are allowed to buy these old machines on the hire-purchase system, there should be an enormous trade in passenger-flying inside the next six months. And all this flying would help enormously to popularise aviation among the public. Also, this could be done quite easily without decreasing the efficiency of the R.A.F. necessary to the Army of Occupation in Germany.

Furthermore, if such pilots were encouraged to take sample machines abroad to the Overseas Dominions and to neutral countries, they should be able to sell a large number of them either to private individuals or to the Government people. One feels sure that the Argentine Republic alone would buy a hundred or two—at a job-line price. Australia would certainly be glad of a few dozen for her own training schools, and no doubt many wealthy Australian farmers would buy aeroplanes and hire chauffeur pilots. Only a week or so ago that talented writer "Medway" drew attention in "Commercial Aeronautics" to the work of Mr. Carey in Australia, and recorded the fact that, being unable to obtain machines in this country, he had opened negotiations with American firms.

The same arguments apply equally if not more forcibly to the quantities of seaplanes and flying-boats which are lying about doing nothing. They could be put to excellent use on the great rivers of South America, Africa, Australia, and Asia, if sold promptly to enterprising business men.

Commercial Enterprise.

In all these cases of machines taken abroad, there would be a direct addition to the national exchequer, and an addition to the nation's wealth also. We must have some millions of pounds' worth of manufactured goods, in the shape of aircraft, ready for immediate export. And, if they are not exported inside the next twelve months, they will be worthless.



THE SKY PILOT.—An Air Force Padre delivering a sermon to Officers and Airmen from the nacelle of an aeroplane temporarily detailed from bombing for "light duty."

If one had the money and the time, and could obtain the necessary permits, one could find no more profitable nor enjoyable way of filling in the period between now and the arrangement of international aerial transport agreements, than by taking half a dozen flying-boats out to Para and giving joy-rides to rich Brazilians, or by taking them to Buenos Ayres and educating the Argentinos. If thoroughly capable pilots were hired, and if the expedition were well managed, one would certainly be able to sell the boats to the local sportsmen, and get orders for more. Also, very probably one could obtain local support to run regular transport services at a later date.

Here, then, is a very quick and simple next step if anyone has the enterprise to take it and sufficient influence to get the necessary permits. One offers the suggestion free gratis to the Aircraft Industry at large, and one hopes that it will be taken up before any of the get-rich-quick crooks who hang round every new industry seize on the idea and spoil future markets by shady methods and bad organisation.

The Teachings of the Past.

The great need is that whatever is going to be done shall be done quickly. If the British Aircraft Industry is to hold its rightful place as the greatest industry of its kind in the world, it must recognise the fact that it is up against the keenest competition. At present our aircraft are the best in the world, in spite of the way in which our newest and best aeroplanes and engines have been held back by technical "experts." But the French and Italians are not far behind us, and we have very nearly taught the Americans as much as we know ourselves about making aeroplanes, although they call them "airplanes."

Therefore, unless we are to be caught and passed by our friendly competitors, it is necessary for us to bestir ourselves and get ahead of them all over the world, and make a name for British aircraft, without waiting for international agreements and such things. American automobiles had almost entirely supplanted British motor-cars in our own Overseas Dominions and Colonies before the war, thanks to the unutterable self-conceit and unfathomable stupidity of the British motor trade. We must see to it that the British Aircraft Industry is not left behind in the same way.

The Need for Speed.

One recalls that, when the reconstruction of South African agriculture and the opportunities for British manufacturers were under discussion at the end of the South African War, that brilliant, if intermittent, genius, Mr. Edgar Wallace remarked in a most convincing article on the subject, that the South African farmer was not going to wait six months for a plough when he could get a plow in six weeks. Similarly the South American, or South African, or Australian, who has read all our propagandist articles about the wonderful work of aircraft in the war and the possibilities of commercial aeronautics after the war, and desires to buy aeroplanes accordingly, is not going to wait a year for an aeroplane when he can get an airplane in three months.

Therefore, if we want to catch the cream of the market and to save the British Aircraft Industry alive, we must get to work at once.

The first step is to begin exporting aircraft and to start civilian flying at home. Only the permission of our own Government is necessary for such steps to be taken. And it is surely within the powers of such a strong body as the Society of British Aircraft Constructors to obtain such permission.

Now is the time for the S.B.A.C. to prove its worth. One may say of its Councillors, "By their works shall ye know them." And at the moment, so far as aviation is concerned, salvation by works is a more promising proposition than salvation by faith.—C. G. G.

DESERVED RECOGNITION.

The following message has been sent by the Army Council to Field-Marshal Sir Douglas Haig, Commander-in-Chief, British Armies in France:—

The Army Council desire, on the occasion of the happy termination of hostilities, to congratulate all ranks of His Majesty's Forces in France upon the magnificent share taken by them in the series of brilliant actions which have contributed so powerfully to the gradual wearing down and final submission of the enemy.

Since August, 1914, the British Expeditionary Force has grown from the small, but highly efficient, contingent which acquitted itself with such renown at Mons, in the Battles of the Marne and the Aisne and at Ypres, to a great Army. For the last four months this Army has waged on a front of many miles an unceasing battle, and has every day won new glories for its standards. Through these four chequered years of conflict, the same spirit of cheerfulness, stoicism, and gallantry which our forefathers so constantly displayed has again been shown in the glorious tale of daily achievements which is the Empire's pride and rejoicing to-day.

To Field-Marshal Sir Douglas Haig, the Commander who has led to a decisive victory over a formidable and skilful foe the mightiest Army ever sent forth to battle from the Empire; to all officers, from the highest to the lowest; to all the rank and file who have borne the burden of the campaign, undaunted by discomfort, wounds, sickness, or death; and also to those whose unceasing labour behind the lines has smoothed the working of the machine of victory, the Army Council tender their tribute of admiration and gratitude, with the hope that, under God, the mighty work which has now been brought to a victorious conclusion on the battlefield may ensure for the Empire a future of honour, prosperity, and peace.

[One is still awaiting a similar message from our Mr. George and his War Cabinet. Meantime, the R.F.C., and its successor the Military Section of the R.A.F., as part of the King's Army, participate in the praise conveyed in this message from those best qualified to allot praise, the Army Council.—Ed.]

* * *

The following telegram has been received from Sir Douglas Haig in reply to the Army Council's message of congratulation:—

"Your warm message of gratitude and congratulation will give great pleasure to all ranks of the Forces under my command, whose noble efforts through more than four years of war it so generously recognises. On their behalf, and mine, I thank you for your telegram, and with them I share your hope that the spirit of duty and self-sacrifice to which the war has given birth may, to the lasting good and prosperity of our Empire, be perpetuated in peace."

THE WORK OF THE 13TH CORPS.

The following special order by Lt.-Gen. Sir T. L. N. Morland, K.C.B., K.C.M.G., D.S.O., commanding 13th Corps, is forwarded for publication:—

On the conclusion of hostilities and in the hour of decisive victory, I wish to express to General Officers Commanding, their Staffs, and to Regimental Officers and men of all arms and departments, my hearty congratulations on the results of their splendid efforts.

During the period 3rd October to 11th November troops of 13th Corps have fought a series of successful actions, have advanced a distance of 50 miles, meeting and defeating 16 actual enemy divisions. During this period they have captured 8,300 prisoners (of 28 divisions), 250 guns, and enormous quantities of stores of all sorts. These results are due to the fine leading of subordinate commanders, the gallantry and devotion of all ranks, and the close co-operation between the various arms—Cavalry, Infantry, Field and Heavy Artillery, Royal Engineers, Royal Air Force and Tank Corps—in the actual fighting, and also to the indefatigible efforts of the Auxiliary Services under great difficulties.

I wish to express to each individual officer, N.C.O. and man my thanks for the part he has taken in the final victory.—H.Q., 13th Corps.

A STAR FOR THE NAVY.

Mr. **Macpherson** announced in the House of Commons on Nov. 14th that a special star and ribbon would be bestowed on all officers and other ranks of the Royal Navy and the Royal Marines who before Dec. 31st, 1915, had served on a ship of war at sea, and also on all officers and other ranks of the military and reserve forces who had served in any theatre of war before the same date.

[This presumably concerns the R.N.A.S.—Ed.]

CONGRATULATIONS.

On Nov. 15th, Mrs. Winston Churchill gave birth to a daughter at 3, Tenterden Street, Hanover Square.

. The .

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LORD WEIR AND AVIATION.

On Friday, Nov. 15th, Lord Weir, Secretary of State for the Air Force, formally opened the exhibition of enemy aircraft at the Agricultural Hall, Islington, officially known as the "Enemy Aircraft View Room."

Lord Weir said:—Since the decision was taken to open this exhibition to the public much has happened. Our thoughts are no longer concentrated on the fall of aeroplanes, but on the fall of Empires sent crashing to their doom by the unprecedented and victorious efforts of the Allied armies.

The tragic burden of war has been lifted and peace again reigns—peace, which though it brings its own problems and difficulties, as great as those of war itself, yet we trust will be an ordered and an enduring one.

My chief regret this afternoon is that our exhibition is confined to samples of enemy aircraft, and does not constitute a complete and real collection of trophies. Somewhere overseas Germany is now arranging, for the benefit of the Allies, a far finer and more complete exhibition of German aircraft, 2,000 in number.

To-day you will expect me to say something of the war in the air and of the services of the Royal Air Force in the past, and a little as regards its possible position in the future.

At the outbreak of war, both France and Germany had a considerable lead over this country both in military aviation and in the industrial field, which is the foundation of the technical strength of an air force. To-day, when as we hope the war is finally over, the Royal Air Force holds the pre-eminent place in every branch of air warfare. More than this, it has finished strongly, with ample resources in hand, the two main supports of any aviation service, personnel and matériel being in such a position as would have assured an increasing degree of supremacy over all the air forces during the next year.

I will now endeavour to explain as concisely as I can the main services which the Air Force has rendered during the war.

Work with the Army.

As an auxiliary to the Armies it has furnished an efficient service to carry out those requirements which the war has proved are necessary for the success of military operations. It has actually done more than that, because it has itself devised and developed new functions which experience has shown to be invaluable to the Army. What are these different functions?

In the first place we have artillery observation—involving spotting and the registration of targets, and, in particular, counter battery work. This, as a captured German order proves, was so efficiently carried out that in one month 13 per cent. of the total German artillery was put out of action. Then there is photography. In six months of 1918 the Air Force units working with the Armies in France alone produced 250,000 photographs, each of which yielded about 30 prints. These consisted of vertical photographs for the artillery, and oblique photographs for the infantry. The work involved photography of every acre of ground in 6,000 square miles of territory.

Three weeks ago I myself was close to Valenciennes. Owing to a spell of bad weather work had been impossible, and photographs of 700 square miles of ground were urgently needed. The morning was good, and I saw countless prints being sent off to the corps and divisional headquarters at 11 o'clock in the morning of negatives taken in enemy country only an hour or two previously.

Reconnaissance and General Observation.—This covers general scouting and observation work, of all movements up to 50 miles behind the enemy's lines. This was developed early this year by means of the use of flares to reconnaissance by night, by which the movements of troops by night were discovered. Photography by night for the same purpose was also initiated.

Bombing Results.

Bombing of Communications and Back Areas.—This is carried out in order directly to interfere with the normal means of transport of the enemy, and to destroy or interfere with his depôts, dumps, and billets. It is carried out mainly by machines designed for the purpose, but almost every machine which goes over the enemy lines, apart from fighting machines, carries a few bombs for use on any suitable target which may be met.

In modern warfare the effect of bombing is undoubtedly important. The results of the total weight of bombs dropped during the years 1917-1918 up to date are as follows:—For the whole of 1917, 1,000 tons, and for the past six months, 5,000 tons, on the Western Front alone.

Contact Patrol.—In infantry attacks the co-operation of aircraft is required to advise the command of difficulties met with and the progress made by the attack. The actual co-operation of infantry and tanks during an attack is a function initiated and developed by the Royal Air Force.

Ground fighting, or "strafing," consists in the direct use of machine-guns carried in aircraft against enemy troops, together with dropping of bombs from low heights. Further, in recent battles, aircraft were used to carry up supplies of ammunition, and even of food, to advanced positions. During the advance in Belgium in September, on one day no less than 13 tons of supplies were carried up in this way.

Part of the Day's Work.

These functions constitute the normal everyday services of aircraft with the Armies, and may be regarded as part of the ordinary day's work which is carried out by the Force in all weathers with a regularity and persistence which is beyond all praise. It is the duty of the fighting squadrons to enable these functions to be carried out with as great an immunity from the attacks of enemy aircraft as may be obtained. This is secured by offensive patrols working in formation and at a specified series of altitudes, in almost all cases over the enemy's lines.

Another function of the fighting squadrons is, of course, to prevent enemy aircraft carrying out their functions over our territory. The effectiveness of the guard which they have kept is best proved, I think, by the fact that of the total losses of our machines due to enemy action, a very small percentage only is lost over our lines.

This function of fighting has been very largely developed owing to the superiority of our pilots and our machines, so that it can be said that other duties have been possible of fulfilment comparatively free from enemy interference.

Air Fighting Figures.

Since Jan. 1st, 1918, on the Western Front alone, 2,967 enemy machines have been destroyed, and 1,333 driven down out of control, making a total of 4,300. The cost to us has been 1,500 machines missing, which includes losses of all kinds, and does not represent fighting losses only, and this distinction is of considerable importance, as in a big attack the losses occurring in the low-flying formations fired at from the ground, and from bad weather conditions, have been far heavier than those due to actual enemy aircraft.

On Other Fronts.

With all the Armies in the various theatres of war a similar degree of service has been provided, with results equally good, or perhaps even more successful, owing to the less numerous and less efficient forces which they have had to meet. If I may be allowed to say so, I believe that there is but little doubt that it was largely due to the work carried out by the Air Force that our victory in Palestine was rendered so sweeping and complete. In this connection, I should like to read you an extract from a report which has been received from Maj.-Gen. W. G. M. Salmond, G.O.C., Commanding R.A.F. in the East.

> The mastery of the air was utilised to the utmost, not only in denying all information to the enemy, but also in rendering all plans for an orderly retirement quite impossible. No sooner was a retirement started than it was brought to an end by the overwhelming action of the aircraft on the retreating columns. The result was that in 36 hours the right wing of the enemy was in complete disorder, and this extended to his centre, and ultimately to his left wing. In every case the retreating columns were brought to a standstill within seven miles of their original point. To the action of the Air Force, by its extraordinary and decisive effect on the operations in so short a time, this was, in my opinion, due.

In the recent Allied offensive in Flanders led by His Majesty the King of the Belgians, the services rendered by the 5th Brigade of the R.A.F., under the command of Brig.-Gen. Lambe, also performed the most meritorious services.

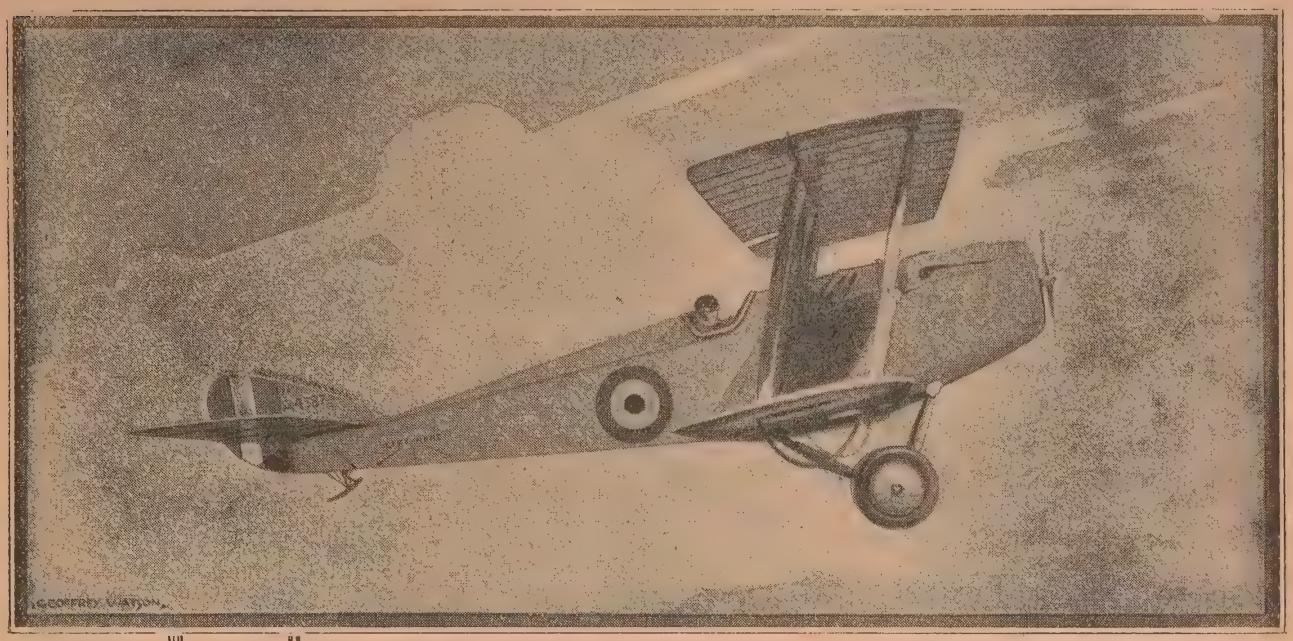
Work with the Navy.

Now, as regards the service provided for the Navy, the character of the work has been more of an offensive nature, but it has been none the less valuable and efficiently carried out. It assists in anti-submarine patrols, involving long flights over the seas. German submarines fear no enemy more than a wireless-carrying aeroplane or seaplane. Patrols are carried out overseas out of sight of land, in many cases in aeroplanes which can keep afloat but for a few hours, and in case of accident the only place where a machine can come to rest may very well be a minefield, where access for rescue is almost impossible.

Innumerable reconnaissances have been carried out by flying boats penetrating from the coasts of England into the Heligoland Bight itself. Reconnaissances are also carried out from the ships of the line themselves and from seaplane-carriers, for the problem of flying an aeroplane from off a ship's deck no longer represents any difficulty.

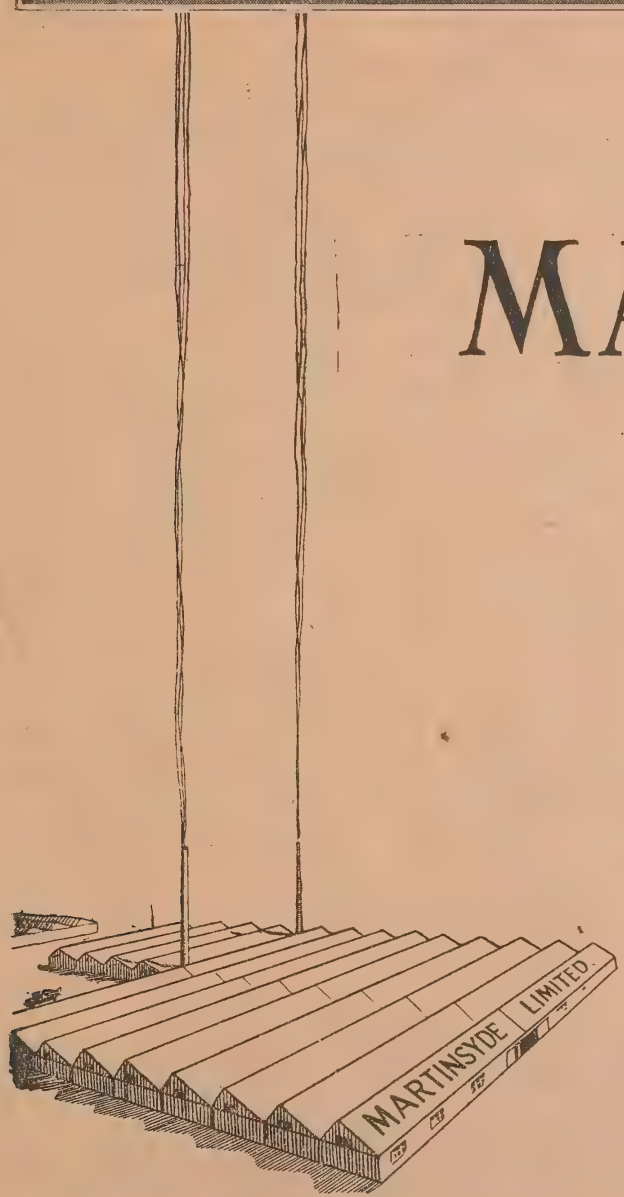
I should like to mention one example of a successful operation carried out by the naval units. I should like to refer to the bombing of Durazzo on the Italian coast, which involved a consecutive flight over the sea, there and back, of 340 miles, and the bombing of Constantinople from the Ægean, a distance from base to target of 140 miles.

A further function of Air Force units consists in the convoy of ships, and I believe I am correct in saying that no ship has ever been sunk which has been under aircraft protection.





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There are other functions which it is not yet possible to disclose.

The whole has certainly contributed largely to the maintenance of the "bulldog" grip of the blockade, and to the slow elimination of the U-boat peril.

This sums up largely the services provided to the two Senior Services of the Crown to help them to achieve their great decisive victories.

The Work of the I.A.F.

Finally, there remains the third function of the Royal Air Force, the new and most potent of all—the air offensive against the enemy's country and the enemy's industrial effort. I refer to the work of the Independent Air Force, which, apart from the Russian Army in the early days, remains the only force of the Allies which has regularly operated in Germany itself. Evidence of its effectiveness will come from the enemy.

The Force has been much criticised. It has been criticised as a dispersion of effort. I agree; but whose effort has been dispersed? Not Great Britain's, but the enemy's. Nothing in the war has caused such a diversion of German man-power and effort as the moral and destructive influence of the bombing of German industrial targets.

So much as regards the work done; the best evidence of its effectiveness will come from the enemy. How has it been done? There are two main factors—first, last, and all the time, the gallantry, skill and self-sacrifice of our boys. Secondly, the technical knowledge, ingenuity and adaptability of British designers and manufacturers.

You will see much to interest you to-day in the examples of German aircraft, but it is not an exaggeration to say that in no direction has their effort not been surpassed by our own people, and I should like to draw your attention to one point in this connection. The Royal Air Force has been criticised for not standardising its types. A great deal of standardisation in details has actually been carried out, but standardisation before a proper stage of development has been reached represents a great danger, into which the Germans actually fell, and in this lies one of the reasons for the superiority of our existing types.

Training.

I wish to allude to-day to another factor on which the efficiency of our Force is based. I refer to the work of those who have organised, developed and carried out the system of training of our pilots, observers and mechanics. No praise can be too great to afford to their efforts, for it must be remembered that the time at their disposal was short, and training had to be in the highest sense intensive. The experience we have gained must not be lost in the future.

Commercial Possibilities.

I should like to add a word with regard to the commercial future of aviation. The possibilities of commercial aviation in the future—even in the near future—are no doubt great, but I think a word of caution is necessary against the forecasts of those who predict a far-reaching and successful development in the years immediately following the war. I wish to point out that the limitations imposed by weather are still great, and can only be overcome by developments in the science of navigation and meteorology which have still to come. At the beginning of the war we had to look forward to a period of pioneer work for military aviation, so we must look forward to pioneer work in commercial aviation. It is my belief that in these developments the State must continue to play the part of a generous father to the Industry. I am to have the advantage within a few days of meeting the representatives of the Society of British Aircraft Constructors, and I hope that, by discussion and agreement with them, methods may be devised by which the State may be enabled to support the Industry in any difficult time which may be coming in order that its existing superiority and efficiency may be maintained.

The Abolition of Restrictions.

One thing at least I can promise—that the existing restrictions on the activity of manufacturers will be relaxed as soon as possible. I hope also that the R.A.F. itself may be able to carry out demonstration flights, not only to show the possibilities of machines which have been designed and developed during the war, some of which possibilities, indeed, would have materialised during the war itself had not the Armistice intervened, but to help maintain and develop an Industry which has been able to produce in 24 hours more aeroplanes than the total establishment of the Royal Flying Corps when war broke out. That industry must be preserved.

At the conclusion of his speech Lord Weir spoke of a scheme to award a German aeroplane to the public school whose boys wrote the most satisfactory number of essays on the exhibition, and a German aeroplane engine to the troop of Boy Scouts which excelled in this direction.

THE EXHIBITION OF ENEMY AIRCRAFT.

The public exhibition of enemy aircraft which is now open at the Agricultural Hall commends itself to the notice of everyone who is seriously interested in aviation. It comprises a really representative collection of German aeroplanes, and setting aside the matter of engines, it is educative chiefly as an indication of what to avoid in aircraft design and construction.

The following machines are included among the exhibits:—

Hannoveraner two-seater fighter with 180 h.p. Opel engine.
Friedrichshafen bomber with two 260 h.p. Mercédès engines.
Gotha bomber with two 260 h.p. Mercédès engines

There is also the fuselage of another Gotha exhibited in section in order to reveal the famous gun tunnel.

A.E.G. bomber with two 260 h.p. Mercédès engines.
Albatros two-seater.
A.E.G. low-flying armoured machine.
Aviatik two-seater with 160 h.p. Benz engine.
L.V.G. two-seater with 160 h.p. Benz engine.
L.V.G. two-seater with translucent camouflaged wings.
Rumpler two-seater with 160 h.p. Mercédès engine.
D.F.W. Aviatik two-seater with 160 h.p. Benz engine.
A de Havilland 9 (a British machine).
Pfalz single-seater with 160 h.p. Mercédès engine.
Austrian Berg single-seater with 200 h.p. Austro-Daimler engine.
Fokker single-seater triplane.
Fokker single-seater biplane.
Albatros D.V single-seater with 160 h.p. Mercédès engine.
Albatros D.I single-seater with 160 h.p. Mercédès engine.
Halberstadt single-seater with Argus engine
Halberstadt two-seater fighter with 180 h.p. Mercédès engine.

The Albatros D.V. is said to have belonged to Rittmeister Baron Manfred von Richthofen's "Circus," and the Albatros D.I was the machine on which the late Prince Friedrich Karl of Prussia was brought down.

Another interesting exhibit is the wreckage of a "Junker" biplane, an all-metal machine with a Benz engine. This aeroplane seems to be the result of an aerial nightmare, and a determination to construct an all-metal machine at all costs. The most interesting feature is the wing construction. The wing is extraordinarily deep in section, and is built up on eight tubular aluminium main spars arranged in two rows of four and cross-braced with aluminium tubing. The minor members of the framework are constructed of sheet metal, and the wing covering consists of painted corrugated aluminium sheets. In its undamaged condition the machine must have looked like a huge model of a German-made toy of the type which used to be sold in this country at 6½d.

One imagines that the vibration of these wings of metal would make the machine very unpleasant to fly, especially in the event of uneven firing of the engine.

A little grim humour is displayed in a tableau representing a crashed Albatros single seater after "a fall from 6,000 feet." The greatest pains have been taken to lend realism to this exhibit, and every detail has been faithfully supplied—not forgetting the corpse!

As a rule, the engines have been removed from the machines for test, but a representative collection of enemy engines complete, and dissected, is shown, including Mercédès, Benz, Argus, Austro-Daimler, German le Rhône, and Oberursel types.

Aeroplane instruments and equipment of all kinds are also on view, and the walls are adorned with numerous instructional pictures from British flying schools, showing the budding pilot what to do, what not to do, and what will happen if he does what he should not.

The exhibition is open to the public from 10 a.m. to 8 p.m. on Monday, Wednesday, Thursday and Saturday of each week only. Admission is 1s., the proceeds going to charity, and for the twofold purpose the money is well spent.

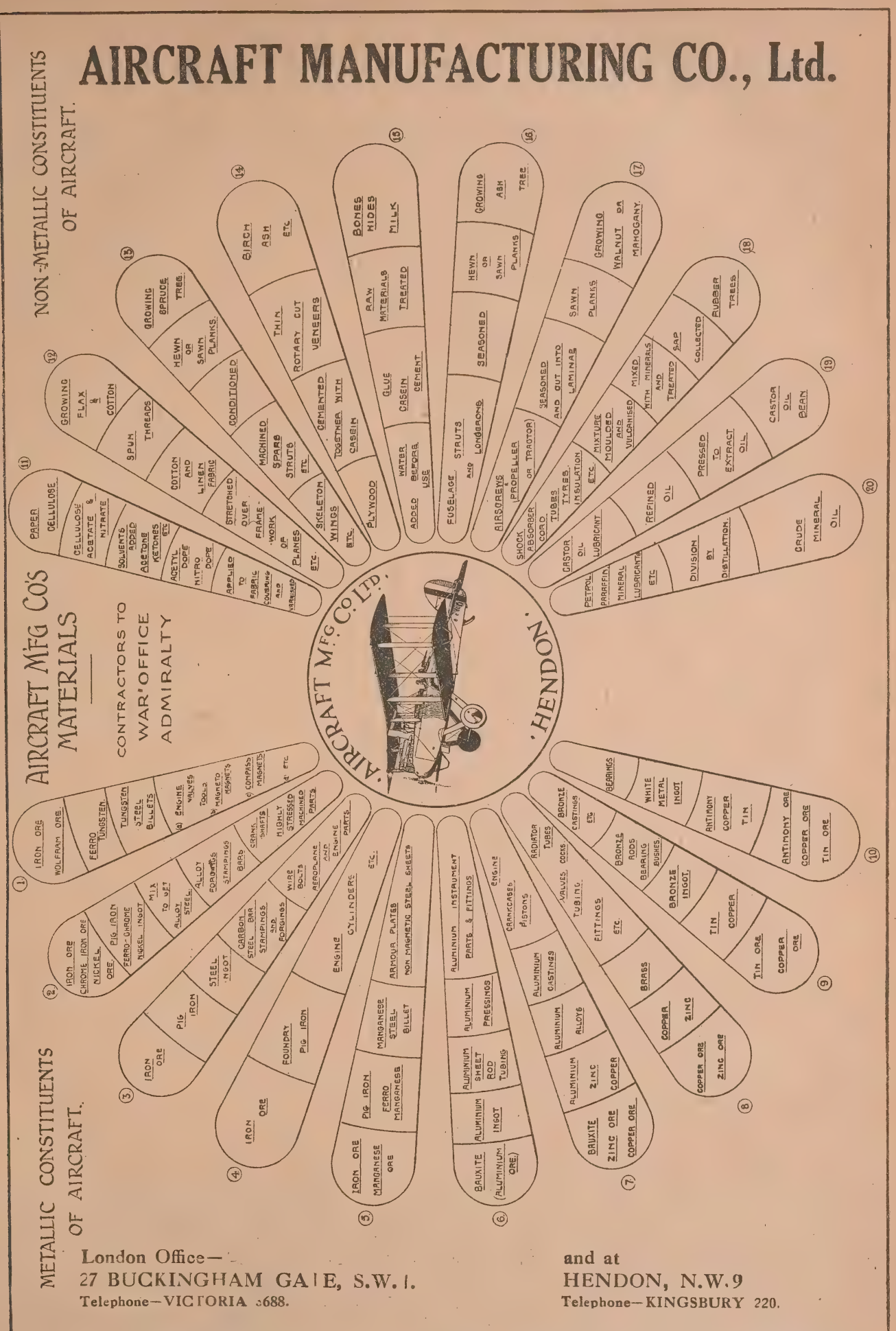
AN AIRSHIP DEMONSTRATION.

From the "Daily Chronicle" of Nov. 19th:—

Many people in London will be suffering from stiff necks to-day. Although war activities in the air are familiar, the sight of a whole fleet of airships skylarking over the metropolis was sufficiently novel to cause some sensation. So when the ships came sailing over the West-end shortly before 1 o'clock yesterday afternoon all London stood agape.

There were 11 of the ships—two whole squadrons. They swerved and curvetted and bobbed about, and the uninitiated thought they were simply out skylarking to celebrate victory. But the aerial gymnastics were really "squadron flying," arranged by the Naval branch of the R.A.F. to give Londoners a treat. The 11 ships started from various bases, carrying full crews, which varied from three to eight, and sailed straight for London and the Agricultural Hall, where the enemy aircraft exhibition is being held. While the ships went through their manœuvres one of them dropped propaganda literature.

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KING ALBERT'S THANKS TO THE R.N.A.S.

A deserved tribute to the successful part which the 5th Group, R.A.F., played in the liberation of Belgium has been paid by King Albert of Belgium. The aviators of the 5th Group previously belonged to R.N.A.S. units, and have been operating on the Flanders coast for some time, in many cases in conjunction with the Navy.

King Albert's recognition of the part played by the 5th Group in co-operation with the Belgian troops is evidenced in the following communication from Vice-Admiral Roger Keyes, commanding the Dover Patrol :—

"The Chief of the Staff of the Belgian Army communicated with the General Officer Commanding 2nd Army under the impression that the 5th Group, R.A.F., were under his orders. The King of the Belgians, however, asked me to convey to the 5th Group an expression of his admiration for the great bravery and skill they displayed in carrying out the task allotted to them under the most difficult and dangerous weather conditions, and his thanks for their services which were invaluable and greatly contributed to the success of the operations."

The following is a translation of the letter from the Chief of Staff of the Belgian Army to which Admiral Keyes refers in his communication :—

"I have asked General Sir H. Plumer, Commander of the 2nd British Army, to convey to you the gratitude of the Belgian Army for the magnificent work accomplished by the Air Force under your Command during the offensive launched on Sept. 28th. The part played by your aviators in the battle was extremely important; in spite of unfavourable weather conditions your gallant aviators accomplished their tasks with consummate ability, great boldness, endurance and a most sublime spirit of sacrifice.

"They thus greatly contributed to the success of the Belgian Army in its first great offensive.

"We desire to thank you, Sir, for your energetic and wise leadership, which ensured the accomplishment of these glorious exploits.

"Please transmit our admiration and gratitude to your heroes and express to them the most hearty congratulations of the Belgian Army for their marvellous co-operation during the Anglo-Belgian offensive in Flanders."

THE LONDON-PARIS FLIGHT.

According to the "Daily Express," Mr. Holt Thomas, of the Aircraft Manufacturing Company, in an interview with a "Daily Express" representative on Nov. 15th, stated that the date of starting the air service between Paris and London depends entirely on the receipt of permission from the Government.

It is understood that the number of aeroplanes employed on flights between England and France will depend entirely on the demand for seats.

Tickets for the aerial journey to Paris have been purchased already by the "Daily Express"; Sir Arthur Stanley, Chairman of the Red Cross; Mr. E. Manville, Chairman of the Associated Chambers of Commerce; Mr. Percy Martin, Managing Director of the Birmingham Small Arms Co.; Mr. Julian Orde, Secretary, Royal Automobile Club; Mr. H. J. Irish, Sir John and Lady Shelley Rolls, Lieutenant Guy A. Reed (of the American Forces), Mrs. Robert Rankin, the Princess Loewenstein, the Hon. Kathleen Robson, Mrs. Alec Tweedie, Mr. A E. Nathan, and Mrs. Locke King.

THE FUNERAL OF CAPTAIN HUCKS.

The late Captain B. C. Hucks was buried with Service honours on Wednesday, Nov. 13th. The coffin was carried on an R.A.F. tender, which also bore a great quantity of wreaths, bearing witness to the esteem in which the deceased officer was held. The leading bodies concerned with British Aeronautics were represented at the funeral, as was fitting in the case of one who had done such great work for aviation, but one regrets to have to note that no senior officer of the Royal Air Force was present, nor was the Air Council officially represented.

So far as the R.A.F. was concerned, the arrangements left much to be desired. There was no firing party, as is the rule in funerals conducted by the King's other armed forces, and the buglers who sounded the "Last Post" were unable to do so properly. No order seems to have been issued concerning correct R.A.F. dress at funerals, with the result that some officers attended in khaki, some in blue, some in British warms, and some in mackintoshes. Moreover, R.A.F. officers encountered along the road failed to comport themselves in a proper manner, some of them merely lounging with pipes in their mouths as the cortège passed.

It is true that the R.A.F. officers who acted as bearers were correctly dressed in R.A.F. khaki, and that the N.C.Os. and airmen who assisted were in correct R.F.C. uniform, which was preferable to the R.A.F. uniform which they ought perhaps to have worn, but the rest of the arrangements drew unfavourable comments from officers of the Regular Army who were present, and one hopes that the Air Council will take the necessary steps to issue orders for the proper conduct of Air Force funerals in future.

—C. G. G.

MR. HOLT THOMAS AND COMMERCIAL AERONAUTICS.

In the course of an interview with a representative of "The Observer," Mr. G. Holt Thomas made, among a number of interesting statements, the following remarks :—

Now that "Dora" allows me to speak, there is no harm in giving details of Captain de Havilland's designs, which have provided a large part of the British construction during the war and an enormous proportion of the service planes for the American Flying Corps.

We have specialised in the last 18 months on weight-carrying, combined with high speed. The "D.H.10," for instance, which was designed for long-distance bombing raids into Germany, but will now be used for commercial purposes, according to the official records, does 128 miles an hour, carries 3,250 lbs., climbs 5,000 ft. in five minutes, and, what is perhaps more marvellous for a two-engine machine of this type, loops the loop and performs any acrobacy which is usually only demanded of a fighting scout.

You do not, of course, want to loop the loop with passengers going to Paris, but the fact that it will shows the flying quality of the machine; and, even though acrobacy will not be demanded on commercial routes, one must always remember that the elements are not under one's control, and it is only the really good flying machine which is thoroughly safe. There is, indeed, no quality that the war has enforced upon our designers which is not absolutely necessary for the commercial machine. We shall use the "D.H.10" for commercial purposes in the immediate future, and carry, I hope, mails as well as passengers.

I have been just as enthusiastic over commercial transport as I was ten years ago over the use of aircraft for military purposes; and although naturally we have been compelled to devote ourselves entirely to war purposes, it has not prevented us from making our preliminary arrangements.

Territorial Rights.

The first point I have recognised with regard to linking up the world by aerial route is the fact that, very unfortunately, British celestial rights apparently end in mid-Channel. It is very unlikely, therefore, that the French Government will allow an all-British enterprise to run a mail to Paris, or that the Italian Government will permit an all-British mail to Rome, or the Indian Government an English mail to Madras, without Italian and Indian interests being considered. Nor is the Norwegian Government likely to allow a mail from Aberdeen to Stavanger without Norwegians as well as British being behind it. An aerial service between London and Paris must necessarily include the rights of Franco-British capital, Franco-British aircraft construction, Franco-British pilots, and, indeed, an international combine in every detail.

Overseas Activities.

Facing these facts—for I think they are facts—I have been for a long time past making certain arrangements In Norway I have caused to be started a company of national importance, "Det Norske Luftfartrederi Aktieselskap," at Christiania for the purpose of joining up with my company, Aircraft, Travel, and Transport Ltd., which is under exactly the same direction as the Aircraft Company, and my other aviation enterprises, with the object of organising and of establishing an aerial mail between Great Britain and Norway.

In the same way my allied company in France is the Compagnie Generale Transaerienne, of which the president is M. Henri Deutche de la Meurthe, who will be remembered as a very early pioneer of aviation, and who built and presented to the French nation many years ago the early airships, "Ville de Paris" and "La Patrie." This company has an agreement with mine generally as to aerial services between France and England.

In Italy I am in alliance with the Societa Trasporti Aerei Internazionali, of which our recent celebrated guest in London, Prince Colonna, is president. I expect the Aerial Transportation Company of India, whose business interests are in the hands of Messrs. Tata, Ltd., to link up the still farther journeys from London, through France and Italy, to India. Arrangements are also completed for another link throughout South Africa, from the Cape to Cairo.

FROM THE G.O.C.-in-C., GREAT BRITAIN.

The following order of the day, which is issued by the General Officer Commanding-in-Chief, Great Britain, was forwarded for publication on Nov. 13th :—

Now that an armistice has been signed by the last of the Enemy Powers I desire to express my deep appreciation of the valuable work done throughout the war by all ranks and all services of the Forces in Great Britain.

The training of officers and men for employment in the field armies and the measures for defence against attack from the air and the sea, which were initiated by Field-Marshal Lord French, have during my tenure of Command been unremittingly and loyally carried out. Service in the Home Forces had been laborious, and without these special compensations attaching to service at the front, but its consistent and efficient performance was an essential preliminary condition to success in the field, and all ranks may feel satisfied with the knowledge that they have faithfully done their duty.

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PLANS FOR RECONSTRUCTION.

The Minister of Reconstruction has appointed sundry bodies, other than committees required to report on specific terms of reference, to advise him on different aspects of the various problems which come before him :—

The Advisory Council consists of a panel of men and women of alleged mature experience and distinction in affairs, from whom the Minister of Reconstrucion can obtain practical and competent advice on any questions of special difficulty or complexity that may arise in connection with the work of the Ministry. For working purposes the Council is divided into five sections, each under the direction of a chairman and vice-chairman selected from the members of the Council. The chairmen and vice-chairmen of the different sections of the Advisory Council meet, as a rule, once a week, to advise the Ministry informally on any points of difficulty that may arise in the daily work of the Department, and to suggest convenient methods of machinery for approaching questions of great complexity and importance.

An Advisory Council on the disposal of surplus Government property has been appointed "To consider and advise, under the direction of the Minister of Reconstruction, as to the manner in which all stores, land, and other property (except shipping and Government factories), under the control of Government Departments, being property acquired for the purposes of the present war, and no longer required for the purposes of the Departments under the control of which it is, shall be dealt with, whether by the transfer thereof to some other Department, or by the sale or disposal thereof to other persons." It consists of the following members, together with representatives of the Departments concerned :—

The Most Hon. the Marquess of Salisbury, K.G., G.C.V.O., C.B. (Chairman), Sir Howard Frank, K.C.B. (Vice-Chairman), the Right Hon. W. Adamson, M.P., S. Lowes Dickinson, Esq., Phillip Hanson, Esq., C.B., Sir R. Sothern Holland, Bt., W. Lander, Esq., Sir Maurice Levy, Bt., M.P., Captain Sir Beville Stanier, Bt., M.P., and Sir John E. Thornycroft. K.B.E.

An Engineering Trades (New Industries) Committee was appointed "to compile a list of the articles suitable for manufacture by those with engineering trade experience or plant, which were either not made in the United Kingdom before the war but were imported, or were made in the United Kingdom in small or insufficient quantities and for which there is likely to be a considerable demand after the war, classified as to whether they are capable of being made by (1) women; (2) men and women; (3) skilled men; and setting out the industries to which such new manufactures would most suitably be attached; and to make recommendations :—(a) On the establishment and development of such industries by the transfer of labour, machines and otherwise; (b) as to how such a transfer could be made, and what organisation would be requisite for the purpose, with due regard to securing the co-operation of labour."

The members of the main Committee, together with the Sub-Committees which have been appointed to deal with particular industries, are as follows :—

The Hon. H. D. McLaren, M.P., C.B.E. (Chairman); Charles Bennion, Esq., Sir George Bullough, Bt., F. H. Crittall, Esq., R. Dumas, Esq., Sir John Griffith, M.Inst.C.E., W. B. Lang, Esq., Charles A. Lister, Esq., C.B.E., P. J. Pybus, Esq., C.B.E., G. H. Sankey, Esq., Sir Percy Stothert, K.B.E., John Taylor, Esq., William Taylor, Esq., William Thom, Esq., Sir W. Rowan Thomson, K.B.E., and H. C. B. Underdown, Esq.

The following Branch Committees will be of interest to readers of The Aeroplane :—

Machine Tools.—Mr. W. B. Lang (Chairman); Mr. J. W. S. Asquith, of William Asquith and Co., Ltd.; Mr. J. W. Darling, of Darling and Sellers, Ltd.; Mr. A. Drummond, of Drummond Brothers, Ltd.; Mr. E. M. Griffiths, of Burton Griffith's and Co., Ltd.; Mr. H. A. Liebert, of John Holroyd and Co., Ltd.; Mr. S. H. March, of Churchill Machine Tool Co., Ltd.; and Mr. H. G. Williams, of Machine Tool and Engineering Association.

Aircraft.—Mr. P. J. Pybus (Chairman); Mr. R. O. Cary, of Sopwith Aviation Co., Ltd.; Mr. N. G. Gwynne, of Gwynnes, Ltd.; Mr. J. D. Siddeley, of Siddeley-Deasy Motor Car Co., Ltd.; Mr. H. White-Smith, of British and Colonial Aeroplane Co.; Mr. G. Holt Thomas, of Aircraft Manufacturing Co., Ltd.; and Mr. C. V. Allen, of Society of British Aircraft Constructors, Ltd.

Hardware, Sheet, Metal, and Pressed Work.—Mr. G. H. Sankey (Chairman); Mr. W. B. Fletcher, of Birmingham Chamber of Commerce; Mr. W. Hall-Jones, of Wolverhampton Chamber of Commerce; and Lt. H. Soper.

Electrical Apparatus.—Mr. J. Taylor (Chairman); Mr. L. B. Atkinson, of the Cable Makers' Association; Mr. A. F. Berry, of the British Electric Transformer Co., Ltd.; Mr. R. Dumas, of the British Thomson-Houston Co.; Mr. D. N. Dunlop, of the British Electrical and Allied Manufacturers' Association; Mr. B. Longbottom, of Electromotors, Ltd.; Mr. G. E. Pingree, of the Western Electric Co., Ltd.; Mr. R. H. Schofield, of Messrs. Ferranti, Ltd.; Mr. S. D. White, of the General Eletric Co., Ltd.; and Mr. Herbert Taylor, of Mather and Platt, Ltd.

Scientific Instruments.—Mr. W. Taylor (Chairman); Mr. Douglas Baird, of Baird and Tatlock, Ltd.; Mr. Gerald Bishop, of Marion and Co., Ltd.; Mr. Arthur Colefax, of Controller of Optical Munitions and Glassware Supply; and Mr. Robert Wigglesworth, of W. Cooks and Sons, Ltd.

Miscellaneous Machinery.—Mr. W. Thom (Chairman); Mr. Charles Ray, of Mirrless, Bickerton, and Day, Ltd.; Mr. H. M. Bickerton, of the National Gas Engine Co.; and Mr. E. D. Simon, of Henry Simon, Ltd.

Motor Industry.—Mr. Underdown (Chairman); Mr. B. Caillard, of British Lighting and Ignition Co.; Mr. C. A. Hyde, of Birmingham Small Arms Co., Ltd.; Mr. E. M. S. Instone, of Daimler Co., Ltd.; Mr. E. Powell, of Humber, Ltd.; Mr. J. W. Stocks, of Components, Ltd.; Mr. L. Walton, of Vauxhall Motors; Mr. H. Wyatt, of Association of British Motor and Allied Manufacturers; and Mr. G. M. Young, of Albion Motor Car Co.

A Storage Executive has been appointed to collect information from Departments of available storage accommodation, to act as a clearing-house of information in respect of such storage, and to allocate the same in the event of more than one Department requiring it. This body is composed as follows :—

Sir Charles Metcalfe, Bt. (Chairman); Capt. Norbury, R.N., Superintendent of Ordnance Stores, Admiralty; Mr. J. W. L. Oliver, O.B.E., Deputy Director of Naval Stores, Admiralty; Col. A. S. Redman, of the Directorate of Movements and Railways, War Office; Brig.-Gen. Heron, C.B., of the Directorate of Mobilisation, War Office; Brig.-Gen. Marindin, Director of Demobilisation, Air Ministry; Lt.-Col. C. D. Hannay, R.A.F., Inspector of Stores Depôts, Air Ministry; Lt.-Col. Lindsay, Assistant Director of Movements, Air Ministry; Mr. W. T. Potts, Director of Forwarding Department, Ministry of Munitions; Maj. the Hon. L. H. Cripps, C.B.E., Deputy Controller of Stores, Ministry of Munitions; Mr. H. F. Carlile, Assistant Secretary, Industrial Power and Transport Department, Board of Trade; Sir Robert Turnbull, Kt., M.V.O., Railway Executive Committee; Mr. L. A. P. Warner, Director of Ports Branch, Ministry of Shipping; Mr. E. J. Foley, Director of Ministry Sea Transport, Ministry of Shipping; Sir Norman Hill, Kt., Chairman, Port and Transit Executive Committee; Sir F. Baines, Kt., C.B.E., M.V.O., Principal Architect, Office of Works; J. Baillie Hamilton, Esq., Director of Storage, Ministry of Food; Sir Howard Frank, K.C.B., Director of Lands, War Office, Ministry of Munitions, and Air Ministry, Disposal of Surplus Government Property Advisory Council; and Lt.-Col. Bonham Carter, Ministry of Reconstruction, who also acts as Secretary to the Committee.

AN EXHIBITION OF AIRCRAFT PAINTINGS.

It should be noted that the private exhibition of aircraft paintings and drawings by Mr. Geoffrey Watson, which has been on view for the past three weeks at the Brook Street Art Gallery, 14, Brook Street, New Bond Street, W.1, will remain open until Saturday, Nov. 23rd, at 1 o'clock. Admission free.

Those readers of The Aeroplane who have not visited the exhibition should make a point of doing so during the next two days, as the exhibition is well worth inspection.

The show includes paintings in water-colours and in black-and-white of a large number of representative machines.

On the black-and-white side, Mr. Watson's original work, drawings which have appeared from time to time in The Aeroplane, the "Graphic," and the "Car," deserve attention. Most interesting of all, perhaps, are the original drawings, some twenty-nine in all, specially executed for and kindly lent by Capt. H. Barber, whose new book, "Aerobatics," they are to illustrate. These drawings show the methods by which each one of the large variety of aerial manœuvres are carried out. In each picture the machine is shown in the successive attitudes which it assumes.

While the show has been on view there have been a large number of visitors to the Gallery, including Major-General W. S. Brancker, Master-General of Personnel R.A.F. The exhibition is open daily from 10 till 5.

COMMERCIAL AERONAUTICS.

All pilots and qualified technical people, whether officers or men, of the Royal Air Force who do not intend to follow a Service career after Peace is declared, and who are seriously interested in the prospects of commercial aeronautics after the war are invited to communicate with Capt. A. J. Swinton, care of The Aeroplane, 166, Piccadilly, W.1. Those communicating should state whether they are pilots, or, if technical people, what has been their precise experience during the war, or before it.

FIGHTING IN THE AIR.

Owing to industrial dislocation resulting from the signing of the Armistice it is once more necessary to hold over the illustrated report of the lecture on "Fighting in the Air," delivered by Major Kennedy-Cochrane-Patrick, D.S.O., M.C., R.A.F., to the Royal Aeronautical Society on Nov. 8th. It is hoped, on the best authority, that it will be possible to publish the report in next week's issue of The Aeroplane.

A BRITISH WORLD'S RECORD.

A new record for passenger carrying has been created by a Handley-Page machine, on which 40 passengers were taken for a flight lasting 30 minutes to a height of 6,500 ft. The old record was also gained by the same firm, when, it will be remembered, 20 passengers were carried in a flight over London in July, 1916.

The work of constructing the aeroplane was completed at noon on Friday, Nov. 15th, and it was given a short trial run around the ground at Cricklewood at 4 o'clock. The subsequent record flight was quite an impromptu affair. It happened that a party of Empire Press Union delegates was spending that afternoon on a visit to the works, and Mr. Handley-Page invited them to be passengers in the trial flight, and the offer was accepted. The passengers included representative editors and other journalists from Canada, India, Australia, South Africa, and New Zealand. The actual list was as follows:—Lord Lisburne, the following members of the Empire Press Union:—Mrs. Everard Cotes, Miss Anne Merrill, Miss E. L. C. Watson, and Messrs. A. Harrington, G. H. Scholefield, N. E. Nash, J. E. Hodgson, R. McEvoy, J. Sevestre, R. W. Trowsdale, John Murrow, P. M. Bussy, H. Gastrell. There were also on board Mrs. Welch, Miss Margaret Groom, Miss Margaret Lillie, Miss G. Murray, Mr. and Mrs. Bruce Douglas, Messrs. J. E. Hammerton, Arthur Mee, J. S. Preston, Geoffrey Watson, A. L. Watson, W. L. Copperthwaite, J. Neilson, guests; and Miss D. Chandler, Miss Margaret Spiess, Messrs. G. H. Cooke, A. H. Foch, B. F. Clark, W. H. Taylor, W. Wilding, P. Houton, M. S. Catchwick, P. S. Pearce, T. Ley, J. J. Baird, and C. A. Peat (the latter in charge of the pumps).

Mr. Clifford B. Prodger piloted the machine round London by way of Hendon, St. Pancras, the Thames, West London, Buckingham Palace and Edgware Road. The weight of the human cargo was 6,022 lbs., and besides that, sufficient petrol was carried for a flight lasting six hours.

Mr. Handley-Page stated that the machine which will be used for the contemplated London to Paris passenger flight is the latest large type, fitted with Rolls-Royce engines. It will have all the comforts of a railway train and the safety of a motor-car or train. The journey will take from two and a half to three hours, and the fare will be approximately the same as the ordinary first-class ticket for train and steamboat. Fifty passengers will be carried, and experiments are being carried out with a view to silencing the noise of the engines.

The machine used was a standard bomber of the largest size, complete in all respects even to the bomb-carrying and release-gear and gun-mounts.





FORTY-ONE PEOPLE IN AN AEROPLANE: The passengers in the H.P. Record Flight. Mr. Handley-Page and Mr. Clifford B. Prodger, the pilot, are seen above.


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NAVAL & MILITARY AERONAUTICS



FROM THE "LONDON GAZETTE."

AIR MINISTRY, Nov. 12th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Director.—Lt.-Col. C. C. Marindin, D.S.O., and to be actg. Brig.-Gen. while so empld., Oct. 28th.

Staff Officer, 1st Cl.—(Air).—Maj H. F. Towler, and to be actg. Lt.-Col. while so empld., Nov. 2nd.

The following temp. appts. are made :—Brig.-Gen. (Staff).—Lt.-Col. E. B. Gordon, D.S.O., and to be actg. Brig.-Gen. while so empld., Nov. 1st.

Staff Officers, 2nd Cl.—Capt. H. I. Hammer, and to be actg. Maj. while so empld., Nov. 1st. (Air).—Maj. G. H. Thomson, Oct. 18th.

FLYING BRANCH.—Lt.-Col. W. D. Beatty to be Lt.-Col (A.), from (T.), Oct. 5th.

Maj. S. T. Dockray to be Maj. (K.B.), from (T.), Sept. 22nd.

Capt. H. Lawson to be graded for pay as Capt. while empld. as Capt. (A. and S.), Nov. 4th.

Lts. to be actg. Capts. while empld. as Capts. (A.) :—W. L. Grech, Aug. 9th; (Hon. Capt.) L. S. Ladd, Oct. 18th; C. P. Allen, Oct. 24th; W. R. B. Annesley, Oct. 27th; E. M. Coles, G. W. Curtis, Oct. 30th; M. D. Allen, Nov. 2nd.

Sec. Lt. H. K. Goode to be actg. Capt. while empld as Capt. (A.), Oct. 28th.

Lt. J. C. Cotton to be Lt. (A.), from (T.), Oct. 4th.

Lts. to be Lts. (A.) from (Obsr. Officers) :—T. C. Stewart, April 23rd; E. B. B. Jefferson, Aug. 16th (substituted for notification in "Gazette," Sept. 24th).

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.) :—J. W. Benton, May 29th (substituted for notification in "Gazette," June 18th); P. C. Weaver-Adams, June 30th; G. R. St. C. Gwynne-Timothy, Sept 30th.

The following are granted temp. commns. as Sec. Lts. (A.) :—J. Rhodes (Sec. Lt., W. York. R., T.F.), July 31st (substituted for notification in "Gazette," Sept. 6th); J. Gibson (Sec. Lt., R.F.A., Spec. Res.), Sept. 15th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.) :—J. B. Young, Sept. 30th; M. Walker, Oct. 5th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—66834 J. F. Houchin, Aug. 30th; 32263 J. H. B. Ives, Sept. 28th; 104887 G. S. Mottram, Oct. 1st; 17760 R. F. Preedy, Oct. 9th; 154705 G. S. Overend, Oct. 14th; 512401 R. O. Standing, 4746 A. Lawrence, 117282 L. C. Atkins, Oct. 24th; 94506 C. E. Garrod, 37125 R. A. Hawman, 401079 A. D. Cruickshank, 113393 D. C. Bristow, 154931, A. Pringle, 422985 E. A. Blake, 88657 C. H. Watson, 100527 W. Imlay, 5522 A. M. Murray, 10/3490 E. S. Cook, 21541 J. H. Code, 110325 G. C. Crookshanks, 29329 J. J. Rankin, 61267 T. F. Strange, 237137 C. S. Theobald, Oct. 25th, 32047 W. S. S. Wray, 117771 W. Blair, 154777 S. P. Ryder, 50617 W. Leith, 128060 F. E. W. Davis, TR/66392 C. G. D Airey, 117209 R. B. Moore, 154783 R. W. Laidlaw, Oct. 26th; 323166 F. H. Roberts, 5207 J. E. Neilson, 626159 J. Medcalf, 117497 A. J Dodsworth, Oct. 27th; 94784 J. Clark, M2/080825 J. T. Foreman, 117157 A. Abernethy, 302901 W. L. Woodhouse, 201281 C. I. Collinge, 14066 A. C. Grave, 117542 W. L. Martin, 9247 J. L. Bowie, 356097 H. C. Lee; 110334 J S. Heggie, 23152 J. R. Stewart, 137028 G. Senior, 110181 H. G. Chapman, 5/97148 R. R. Mason, Oct. 28th; 47192 G. A. March, 117664 S. Spratt, 628077 R. Ingram, 2635 C. Crosthwaite, 111779 J. Crawford, T4/250312 G. C. Cates, 123084 H. D. Clevely, 1/19653 T. Stewart, X285 G. W. Shepherd, 99932 F. Gough, 14548 E. Grimshaw, 201141 A. J. Sandford, 100376 W. A. C. Haines, 255165 C. F. Bennett, Oct. 29th; 100107 E. J. H. Wright, 19159 H. Enzlin, Oct. 30th; 128107 T I Irving, 10444 G. B. Eldred, 306605 R. G. Scott, 128202 W. Leslie, 154643 J. L. Stevenson, 3/57792 K Onyett, 54752 A. C Boland, 289 G. West, 20423 J. C. Fairbairn, 321587 H. G. Macklin, 42486 A. B. Fricker, 57632 C. D. Metcalfe, 110110 A. A. Ker, 5/96489 G. E. Reed, Oct. 31st.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A. and S.) :—114756 J. E. S Tennant. Oct. 5th; 63277 F. W. Trend, Oct. 15th; 137081 H. C. Smith, Oct. 25th; 137062 J. R Frean, 137914 R. Hafmeyr, 137942 H. S. Russell, Oct. 26th; 137887 H. C. A Arnot, 137030 D. R. Sass, 176454 B. Biggs, 176456 C. Beviss, 176457 N. T. Brookes, 176458 R. E. Bell, 176460 F. N. Brink, 176464 B. M. Cairns, 176466 L. G. Crowder, 176467 C. G. Cooper, 176470 S. T. H. Daniel, 176473 E. B. Fison, 176497 H T. Ayliff, 176498 G. L. C. Beattie, 176500 L. G. Bolton, 176501 M. C. Burt, 176502 L. M. Brown, 176503 A. J. Cundill, 176508 W. Coutts, 176513 H. V. Edkins, 176515 E. H. Edgar, 176516 N. J. Eddy, 176519 J. S Ford, 176522 H. M. Fridjohn, 176525 J. D. Gallwey, 176526 G. V. Gordon, 176527 E. B. Gascoine, 176529 J. F. R. Greef, 176530 H. J. Godfrey, 176532 F. Glaholm, 176538 R Hinsch, 176540 E. H. Hodgson, 176547 J. E. Hofman, 176548 G. M. Hay, 176570 M F. S. Burger, Nov. 2nd.

Sec. Lt. R. T Smith (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (K.B.), Sept. 14th.

128376 Flt. Cadet A. E. S. Gascoigne is granted a temp. commn. as Sec. Lt. (K.B.), Oct. 12th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—175889 R. W. Smith, 178024 H. E J. Steele, 177986 E. F. Shaw, 177136 R. C. Hatcher, 178125 A. G. Mann, 127630 E. B. Cross, 54532 D. McIntyre, 176187 C. S. Miller, 177083 D. McK. Ferrier, Oct. 24th; 187427 R. B. Fortune, 177510 A. C. Scarr, Oct 26th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts (S.) :—35299 G. Warhurst, Oct. 19th; 100607 J. W. Kersley, 100535 R. H. Price, 22531 R. D. Bird, 4298 A. G. Thackray, Oct. 23rd

The following relinquish their commns. on ceasing to be empld. :—Sec. Lt. R. H. Blackmore, June 10th; Sec. Lt. H. C. W. Ross, Aug. 12th, Lt. H. B. H. Dickinson (Lt., I.A.R.O.), Aug. 16th; Lt. B. M. Hay (Capt., Can. Engineers), Oct. 16th; Sec. Lt. (Hon. Lt.) J. I. T. Harrison (Lt., Lan. Fus.), Oct. 25th; Sec. Lt. (Hon. Lt.) F. S. Williams (Lt., Mon. R., T.F.), Oct. 28th; Lt. N. C. Crombie (Lt., R.F.A., T.F.), Oct. 29th.

Capt. A. P. Haywood relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Capt., Nov. 13th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt. :—R. D. Buxton, Oct. 19th; J. Fitz-Hugh, J. E. Le Gallais, J. H. C. Nixon, Nov. 13th.

Lt. (Hon. Capt.) C. A Moore (Capt., Man. R., C.E.F.) relinquishes his commn. on account of ill-health, Nov. 13th.

Lt. E. Rowlands relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Nov. 13th.

The following Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs. :—C. S. Challoner, L. C. Galloway, Nov. 13th.

The following Sec. Lts. relinquish their commn. on account of ill-health :—S. Gaskill, and is granted the hon. rank of Sec. Lt., June 22nd; J. Thompson, Nov. 13th.

The following Sec. Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs. :—G. Begg, L. W. Faucett, Nov. 13th.

The dates of appt. of the following as Sec. Lts. (A.) are as now stated :—P. L. Teasdale, May 27th; S. T. Goodnoh, July 15th; F. W. Barker, July 20th.

The date of appt. of A. J. Hamilton as Sec. Lt. (A. and S.) is April 27th, and not as stated in "Gazette," Aug. 27th

The notification in "Gazette," Oct. 15th, concerning Lt. R. D. Buxton is cancelled.

The notification in "Gazette," Sept. 10th, concerning Flt. Cadet R. S Stainsby is cancelled.

The notification in "Gazette," Oct. 29th, concerning Lt. H. E. Haslehurst is cancelled.

The notification in "Gazette," Oct. 25th, concerning Sec. Lt. J. E. Phelps is cancelled.

The notification in "Gazette," Oct. 25th, concerning Sec. Lt. J. V. Flanagan, is cancelled.

The notification in "Gazette," Sept. 24th, concerning Lt. C. G. Fenton is cancelled.

The notification in "Gazette," Sept. 10th, concerning Lt. A D. Light, is cancelled.

The notification in "Gazette," Oct. 11th, concerning Sec. Lt. J. Gibson is cancelled.

The notification in "Gazette" of Sept. 17th, concerning Sec. Lt. (Hon Lt.) A. J. Tremblay is cancelled.

The initials of Sec. Lt G. V. Raymond are as now described and not as in "Gazette" July 16th.

The notification in "Gazette," June 25th, concerning Sec. Lt. (Hon Lt) T. C. Stuart (temp. Lt., New Armies Gen. List) is cancelled.

The notification in "Gazette," Sept. 13th, concerning Sec. Lt. P. C. W. Adams is cancelled.

The notification in "Gazette," Sept. 17th, concerning Lt. E. W. Grant is cancelled.

ADMINISTRATION BRANCH.—H. B Nutting (Maj., Ind. Army) is granted granted a temp. commn. as Capt., and to be Hon. Maj. (Sept. 12th, sen., April 1st, and prec. next below F. A. Maclean).

Capt. C. J. Dickinson to be Capt., from (A.), Sept. 30th.

Lt. (actg. Capt.) W. Mitten retains the actg. rank of Capt. whilst empld. as Capt)., from (A.), Oct. 24th.

Lts. to be actg. Capts. while empld. as Capts. :—W. Bowring, Oct. 29th; H. Jackson, Nov. 1st.

S. Morris (Or.-Mr. and Hon. Capt., A.S.C.) is granted a temp. commn. as Capt. (April 29th, sen. April 1st, and prec. next below S. H. Cleall).

Lts. (A.) to be Lts. :—J. E. Arnott, Aug. 7th; L. C. Tyson, Sept. 28th, H. W. Holmes, Oct. 16th; (Hon. Capt.) F. H. H. Miles, Oct. 17th; S. H. Preston, Oct. 19th; B. C. Scott, Oct. 21st; W. R. Northridge, Oct. 25th; T. D. Penrice, Oct. 29th; Lt. W. V. Radford to be Lt. from (K.B.), Oct. 29th.

Lts. (O.) to be Lts. :—H. C. Reade, April 1st; (Hon. Capt.) E. F. G. Thomson, Oct. 23rd.

Lt. J. A. Clarke to be Lt. from (S.), Sept. 12th.

W. N. Cuthbert (temp. Lt., E. Surr. R.) is granted a temp. commn. as Lt. (July 6th, sen April 1st, and prec. next below A. C. N. Spicer).

H. V. Whitaker, late Lt., R.A.F., is granted a temp. commn. as Lt., Nov. 11th.

The following are granted temp. commns as Sec. Lts., and to be actg. Lts. while specially empld. :—A. G. Whittaker, Oct. 8th; S. A. Knight, Nov. 5th; W La Brum (Hon. Capt., ret. List), and to be Hon. Capt., Nov. 8th; P. Brown, A. T. Cooper, Nov. 11th.

Sec. Lts. to be actg. Lts. while empld. as Lts. :—R. D. Thomas, Oct. 16th; T. H. Holmes, from (O.), Oct. 20th.

H. F. Webb (temp. Sec. Lt., R. Suss. R.) is granted a temp. commn as Sec. Lt. (Aug. 28th, sen. from April 1st, prec. next below J. G. Tennant).

The following are granted temp. commns. as Sec. Lts. :—A. E. Firth (Sec. Lt., R.F.A., Spec. Res.) (Sept. 23rd, sen April 1st, prec. next below R. E. F. L. Bristow).

(Continued on page 1925.)

German Admission of British Superiority.

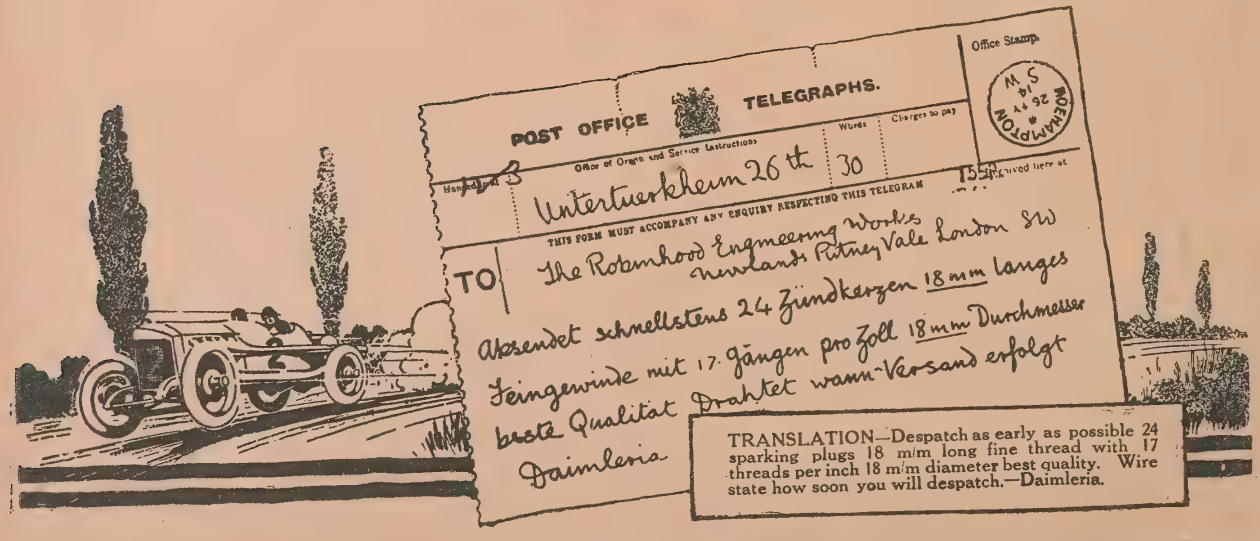


Type F7
Detachable.

Before the war one observed the old tag everywhere—"Made in Germany"—and deplored the fact that we could not make our own commodities. An exception to the rule, however, was the

K.L.G. PLUG

for although Germany made plugs and flooded the British market with them, yet they admitted the superiority of the British by sending for them for the last Grand Prix race. The following facsimile of a telegram received from the manufacturers of the Mercédes car at Stuttgart—which by the way is the home of the Bosch Company—is particularly interesting as well as convincing, more so as the Mercédes finished 1st, 2nd and 3rd.



Sole Manufacturers:
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REPORT ON THE GOTHA BOMBERS.

With Notes on Giant Aeroplanes.

The following report is published by kind permission of the Technical Department, Ministry of Munitions, to whom the Editor desires to express his thanks.

PRELIMINARY NOTE.

[The following reports on the Gotha Bombers, of three types, are reproduced with a few verbal corrections from the reports of the Technical Department, but certain illustrations and particulars have been omitted as they have already been given in the earlier reports on the Gotha and Zeppelin aeroplanes contributed to this paper by M. Jean Lagorgette. Incidentally, it is curious that though the report on the four-engined bomber appears to deal specifically with the identical machine described by M. Lagorgette, there is no reference in this report to the Zeppelin or Albatros origin of the machine, which is simply assumed to be a Gotha. M. Lagorgette was particularly emphatic as to the machine not being a Gotha product at all, so further information on this point is desirable.—C. G. G.]

THE TWIN-ENGINED GOTHA.

The standard type of two-engine Gotha is a pusher, the appearance of which is characterised by the backward sweep of the main planes, which are also set at a lateral dihedral angle.

The set back of the planes is 4 deg., and the dihedral approximately 2 deg.

The following are the principal dimensions of the aeroplane.

Maximum span	77 ft.
Span of lower plane	71 ft. 9 ins.
Gap	7 ft.
Maximum chord	7 ft. 6 ins.
Minimum chord	7 ft. 2½ ins.
Over-all length	41 ft.
Area of top plane	521.6 sq. ft.

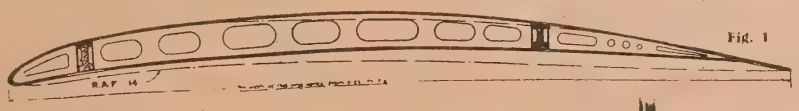
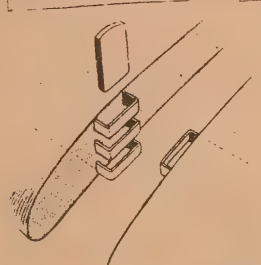


Fig. 1



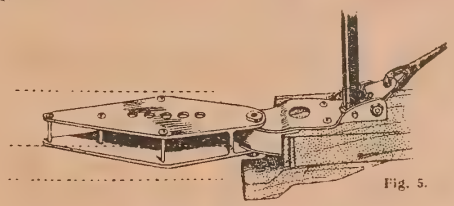


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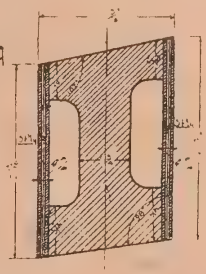


Fig. 2

TRAILING SPAR

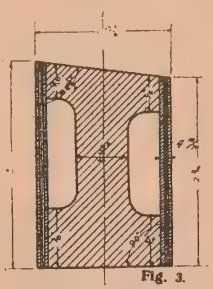


Fig. 3.

LEADING SPAR

Fig. 4.

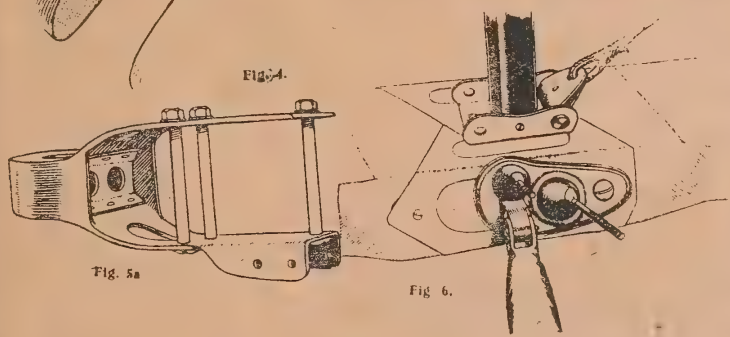


Fig. 5a

Fig 6.

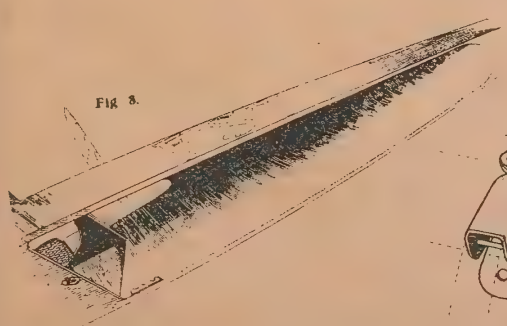


Fig 8.

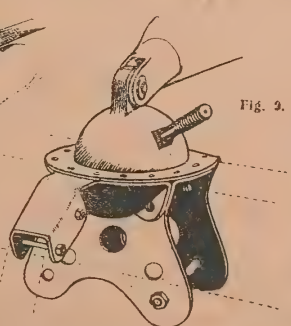


Fig. 9.

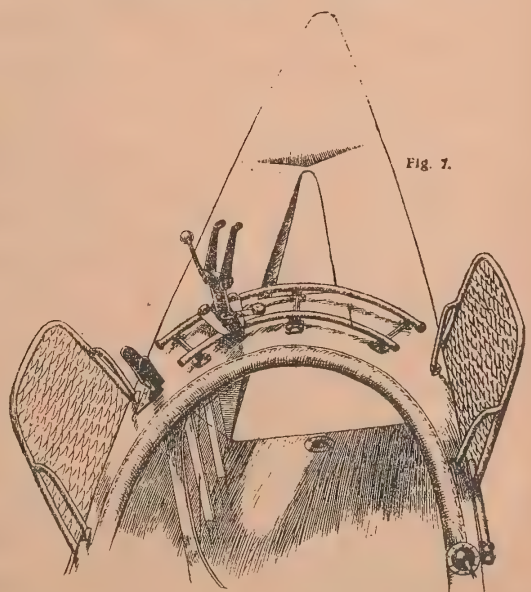


Fig. 7.

Area of bottom plane	464 sq. ft.
Total area	985 sq. ft.
Area of upper aileron	32 sq. ft.
Area of balance of aileron	3.2 sq. ft.
Area of bottom aileron	22.4 sq. ft.
Span of tail planes	13 ft. 6 ins.
Area of tail planes	45 sq. ft.
Area of rudder	16 sq. ft.
Area of rudder balance	3.2 sq. ft.
Area of elevators	19.2 sq. ft.
Area of fin	11.2 sq. ft.
Area of body in horizontal plane	96 sq. ft.
Area of body in vertical plane	107 sq. ft.
Weight empty	2,740 kg. = 6,039 lbs.
Useful load	1,235 kg. = 2,722 lbs.
Total weight fully loaded	3,975 kg. = 8,763 lbs.
Loading per sq. ft.	8.9 lbs.

Engines.

Two 260 h.p. Mercédès

Engine centres	14 ft.
Airscrew diameter	10 ft. 2 ins.
Track of main landing wheels	3 ft. 2½ ins.
Track of auxiliary landing wheels	2 ft. 7½ ins.

The speed of this machine at 12,000 ft. is estimated at 72 miles per hour.

Construction.

Wings.—The wings of this aeroplane are of wooden construction throughout, and have a section as shown in Fig. 1. This drawing also illustrates the construction of the rib (the web of which is of three-plywood, extensively perforated, and the flange of solid wood grooved to fit upon the web, to which it is tacked).

For the purposes of comparison, the section of the R.A.F. 14 wing is super-imposed and drawn to the same scale. This is shown in broken lines.

The disposal of the spars is as follows:—

Leading edge to centre of leading spar, 9 ins.

Centre of leading spar to centre of trailing spar, 4 ft. 4 ins.

Centre of trailing spar to trailing edge, 2 ft. 5 ins.

The space between the leading edge and the leading spar is covered as to the upper surface with three-ply, the rest of the wing being covered with fabric in the usual way.

The spars possess several points of interest, and their dimensions and method of construction are presented in Figs. 2 and 3, from which it will be seen that they differ from the practice adopted in other German designs.

The I Section main members are of spruce. The three-ply walls, applied to them by glueing and tacking, are principally birch, and are 4 mm. thick.

The spars are wrapped with fabric throughout.

In the earlier Gotha designs the sweep back of the wings was 10 deg. In the present design it is 4 deg., due probably to the fact that other means have been successfully adopted to get the centre of gravity sufficiently forward.

It is particularly worthy of note that whereas the upper wing surface consists of two portions which unite at the centre line of the machine, the lower plane on each side consists of the centre section attached to the base of the fuselage, and an outward extension, between which is interposed a short span of plane forming, with the engine bearers and their struts, and the landing carriages on each side, a completely independent and separate unit. These small sections of planes are covered in with three-ply, both top and bottom, and the same material is used for the upper surface of the centre section of the lower plane.

At the junction of the two upper wings, a rather unusual joint is employed; this is illustrated in Fig. 4, and consists of a series of rectangular staples which are held together by a steel wedge. The joints used in the lower plane are of a different character, and embody the usual pin principle, giving the spars, when not braced by the wiring, a hingeing action in the vertical plane. This joint is shown in Fig. 5, which also illustrates the manner in which the wings are braced against drag stresses by means of very light steel compression tubes and cables.

Another view of the box joint on the spar end is given in Fig. 5a, which shows its internal construction. Joints of the above design are used on either side of the engine bearer section.

Struts.

Apart from the struts which separate the engine eggs and brace them to the fuselage, there are three pairs of interplane struts on each wing. These struts are composed of steel tubing, to which is attached a three-ply fairing. The design of the strut joint is shown in Fig. 6.

The wire bracing throughout is by multi-strand steel cable, the fitting of which, however, presents no features of interest.

Ailerons.

Only the upper ailerons are balanced, the upper and lower ailerons being connected by a single strut on each side. The operating lever is fitted on the top aileron, and works in a slot cut in the upper main plane. From this lever wires are taken over pulleys on the leading spar of the lower plane, and thence to the fuselage through the space between the leading edge and the forward spar.

Where the wires pass through the small sections of lower plane under the engines, they are provided with detachable connections which can be inspected through hinged flaps.

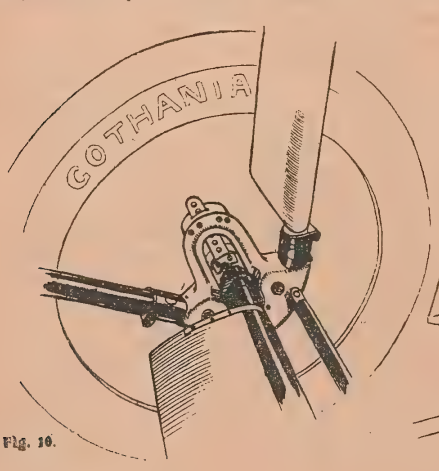
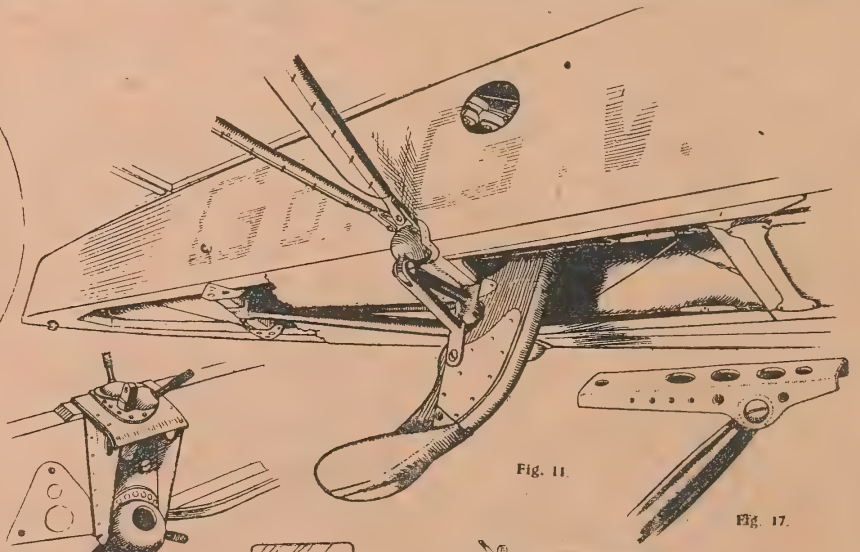
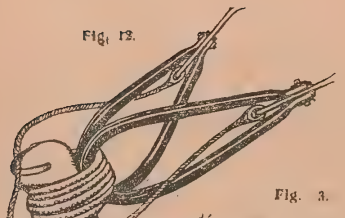
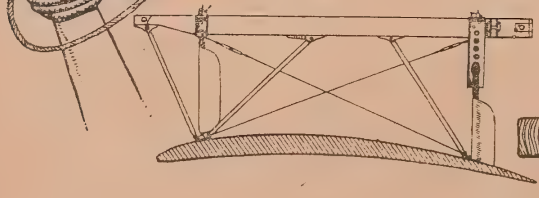
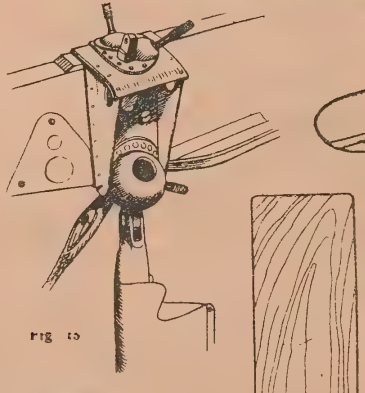


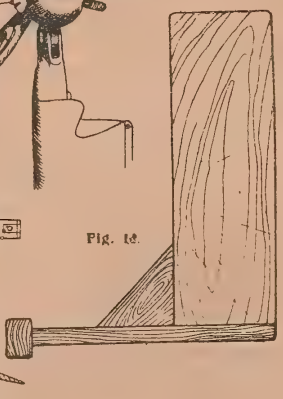
Fig. 10.


Fig. 11.


Fig. 12.


Fig. 3.


Fig. 13.


Fig. 14.

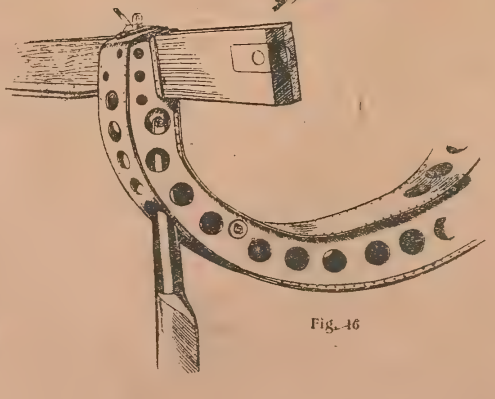

Fig. 16.

Fig. 17.

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The framework of the ailerons is of steel tube throughout, involving a welded-up one-piece construction.

Airscrew Accommodation.

In order to permit the engine eggs to be placed sufficiently far forward to allow of the centre of gravity being correct, considerable inroads have had to be made in the trailing edge of both upper and lower planes in order to give scope for the airscrews. In front of the screws, the chord of the planes is reduced to 5 ft. 9 ins., and at this point the trailing edge is very blunt.

Empennage.

The whole of the empennage construction is of steel tubing, and the various components are rigidly braced together by inclined streamline struts, which, as in the case of the main struts, are of circular section steel tubing, to which a three-ply fairing has been added.

These external struts give the Gotha tail a somewhat clumsy appearance, and would seem furthermore to exercise a notable masking effect upon the rear gun. Only the rudder is balanced, and it will be noticed that the area of this organ, compared with that of the fin, is very large.

Fuselage.

The fuselage is in one piece from nose to rudder post, and is an entirely wooden construction, consisting of the usual longerons and wooden transverse members. It is covered in with three-ply throughout its length on the top, bottom and sides, but whereas in most German aeroplanes the three-ply lining is relied upon for solidifying the structure, in this machine it is extensively reinforced by diagonal wire bracings, especially in the forward portion of the fuselage at the point at which the main planes are attached.

In the extreme front is placed the front gunner's cockpit. Immediately behind him, and on the left-hand side of the machine, sits the pilot; beside him is a folding seat for another passenger.

Between the pilot's seat and the rear gunner's cockpit are placed the two main petrol tanks, which occupy the full width of the fuselage.

The original intention of the designer was evidently to fit tanks of smaller capacity, shaped in such a way as to provide a communication tunnel between the pilot's seat and the rear gunner's cockpit. For this purpose the wooden bulkheads on each end of the tank space are deeply cut away on the left-hand side. With the existing arrangement of tanks, however, no interchange of personnel is possible.

Another small point of interest is the inclination of the back of the pilot's seat; for this purpose careful consideration of space has resulted in a wedge-shaped piece being let into the forward tank, indicating again that all possible means have been adopted to get the C.G. sufficiently forward.

The rear tank is of identical construction, and also possesses this wedge-shaped arrangement. In this case, however, the wedge-shaped piece represents waste of space.

The rear gunner's cockpit is roomy and provided with a folding seat. Abaft of it, the fuselage is furnished with an elaborate gun tunnel, which, however, differs very markedly from that which was incorporated in the earlier Gotha designs, in which the fuselage was completely covered in as to its top surface, and the tunnel was only used for a gun mounted on the floor of the cockpit. In the present design, the tunnel is furnished with a V-shaped opening in the upper surface, so that the gun mounted on the top of the fuselage can fire backwards and downwards through an arc of about 25 degs. laterally and about 60 degs. vertically. This is shown in Fig. 7.

The inside of this tunnel is lined with three-ply wood, and its arrangement is clearly shown in Fig. 8. On the floor of the fuselage, in the rear gunner's cockpit, a mount is provided for a second gun, but in none of the Gotha machines brought down was a gun fitted at this point.

It is noted that to give the rear gunner a greater feeling of security, and to prevent any loose articles from falling out, wooden cross-pieces are fitted up immediately in front of the tunnel opening. At the forward end of the tunnel the fuselage is evidently weak, as it was at this point that breakage occurred in most of the machines brought down.

Fig. 9 illustrates one of the brackets by means of which the fuselage is secured to the upper main plane; it carries a short stream-lined strut. It will be noticed that the characteristic German dome-shaped clip is used, but that in this case the usual welded joint is replaced by rivets. This bracket occurs at the after bulkhead immediately behind the rear petrol tank; the dotted lines proceeding from the small clip indicate how this bulkhead is cut away so as to provide, in the original scheme, an opening through which the personnel could squeeze in order to change places if necessary.

Undercarriage.

The undercarriages on each side form, with the engine mountings and a small section of the lower main plane, completely independent units. There is no landing wheel under the nose of the machine as is the case in the Friedrichshafen design. Each undercarriage has four wheels. The larger pair are attached to an axle placed immediately under the centre of the chord of the main planes, which point may be assumed to approach very closely the centre of gravity. This axle, as shown in the detail sketch reproduced (Fig. 10), moves up and down in guides against the action of two long compression springs concealed within the main undercarriage struts. A stout steel cable is passed over the axle and under two pulleys enclosed in the horn plate; thence it goes up inside the long springs to the heads of adjustable bolts, against which the upper ends of the springs abut. The axle is fitted with a large three-ply fairing attached by means of light straps, and at its outer end terminates in a tee-piece, which slides up and down in a slot in the horn plate, and prevents the axle from turning round.

Only the front undercarriage strut is streamlined. It is stayed with a tube to the middle of the rear strut, and at this point the mudguard brackets are fitted.

The front pair of landing wheels, the fitting of which is to facilitate landing in the dark, are supported on an axle attached to the frame extension by bands of steel coil springs of the type usually found in the smaller German designs.

The front wheels are smaller in diameter and narrower in track than the main landing wheels.

In every case the forward extension of the undercarriage was very badly crumpled up, and it is noticeably light in construction compared with the massive main landing gear.

As might be expected, a very stout tail skid is fitted. This is shown in detail in Fig. 11.

The hinged skid is very strongly stayed in all directions. At its upper end it is attached with loops of steel coil springs to two tubular steel rings clipped to either side of the fuselage. A steel cable limits the distance through which the tail skid can move.

The body of the tail skid is of wood, but it is heavily reinforced with a steel shoe and with a steel front edge. Fig. 11 also shows the attachment of the lower tail struts to the bottom of the fuselage, and it will be seen that these are provided with sharp bars to discourage mechanics from lifting the tail by their means.

Engine Mounting.

The 260 h.p. 6-cylinder Mercédès engines are carried on bearers arranged as illustrated in Fig. 13.

The bearers themselves are of wood, and between the main vertical supports on which they rest, are of the section shown in Fig. 14. They are attached to these main supports by ball joints of large diameter, and the struts are streamlined with casings of thin metal. These are shown in Fig. 15.

At their rear ends the engine bearers are united by a curved cross piece of hollow section, built up of sheet steel riveted together. (Fig. 16.)

The engine bearers are triangulated to the plane section below them by cross wires as shown in Fig. 13, and also by diagonal steel tubes, the latter being attached by feet of the type shown in Fig. 17.

The bracket supporting the bearers in front entirely surrounds them, and at its upper end is provided with an attachment for the strut which unites the engine mounting to the top plane spar, and also with a ball and socket attachment for the undercarriage bracing cables.

At the bottom of the forward engine bearer support is attached one of the diagonal strengthening members of the forward undercarriage framework.

Engines.

In general the engines show no departures from the usual Mercédès practice, but there are a few points which are worthy of note.

Two different kinds of radiators were employed on machines otherwise exactly similar, the principal difference between these radiators being the arrangement of the shutters; in one case a series of vertical panels is used, and in the other a simple sliding door is adapted to be raised or lowered so as to shield the radiator surface to the required degree.

Electrical thermometers of the usual pattern are fitted.

The radiator controls are placed one on each side of the pilot's cockpit, and are illustrated in Fig. 20.

Five different positions of the lever are provided for, and it works the shutters through return cables passing over a large aluminium pulley.

Two different kinds of silencer were found; the type illustrated in Fig. 21 is similar to that used on previous Gothas, and also on the Friedrichshafen machines. It consists of a sheet steel manifold of very light construction, containing no baffles or other means of restricting the outflow of gas.

The other type of exhaust box is shown in Fig. 22, and in this case it would appear that some attempt has been made not only to silence the exhaust, but also to prevent the aeroplane showing its whereabouts through the exhaust flames.

This new type of silencer has been reported upon as follows:—

The manifold has been altered in the spacing of the communications in order to fit it onto a B.H.P. engine in a D.H.9. The manifold consists of a cylinder 3 ft. 9 ins. long and 6 ins. in

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diameter; pointed nose and tail pieces are welded on, and 14 cooling fins running lengthwise are fitted. Between the fins a number of ¼-in. diameter holes are drilled, forming a means of outlet for the exhaust gases, no baffle plates being fitted; the whole is made up of 20-gauge sheet steel, and is very flimsy in appearance.

For testing this exhaust as a flame damper, a machine fitted with the manifold was flown at night with no navigation lights, and another machine was sent up to find it. As a silencer the manifold reduces the distance at which the machine is audible by a mean of about 4 per cent. No difficulty was experienced by the observing pilot in picking up the machine; although the flame usually seen at night was broken up, there was a stream of small sparks which made the aeroplane just as visible. In addition, it was noticed that the manifold became red hot when the machine was flown at full throttle.

Controls.

All the Gotha machines brought down were fitted with the same type of control, though certain detail differences are noticed.

The ailerons are worked by a large diameter wheel by means of a chain and sprocket as shown in Fig. 23.

Limiting cables are fitted and attached to an adjustable clip on the column.

The wires are passed over pulleys and issue through the ends of the transverse rocking shaft, whence they pass through the planes between the leading edge and the leading spar of the lower wings.

At the extreme outer interplane strut they are taken over pulleys to the levers of the upper ailerons, which are connected to those of the lower ailerons by a light streamline strut. The horizontal rocking shaft extends through the side of the fuselage, and is there fitted in some cases with the simple form of double-ended crank shown in Fig. 23, but in others with the quadrant type of lever built up of steel tube, and illustrated in Fig. 24.

The elevator and rudder wires are led along the outside of the fuselage through guides.

The control wires for the elevator are duplicated, and in the case of the rudder a double crank is fitted on the rudder post. This is shown in Fig. 25.

The rudder control bar is of the usual welded-up steel type, and is fitted with spring controlled heel rests. It is fitted with a grooved quadrant carrying the wires which pass over pulleys mounted in brackets on the inside of the fuselage walls. The rudder bar is shown incidentally in Fig. 27. No form of dual control is fitted. It is, however, of interest to note that whereas in the Friedrichshafen design means are provided both for adjusting the trim of the tail and for locking the controls in any desired position, the Gotha machine possesses neither of these refinements.

Engine Controls.

The throttle levers are fitted on the left-hand side of the pilot's seat, which is also on the left-hand side of the fuselage. This control consists of two mallet-headed levers, which are shaped so as to be conveniently worked either together or separately; the cranks and rods which they operate are placed outside the main section of the fuselage, and are covered in with a streamline metal casing.

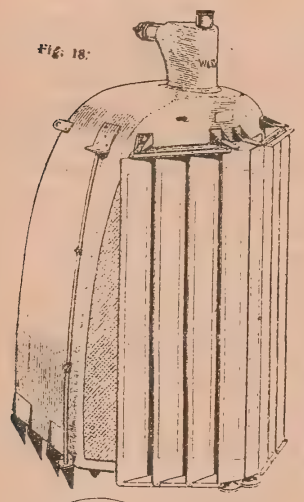
The engines are fitted, as is the usual Mercédès practice, with combination ignition and throttle controls; the function of the ball-headed third lever is not precisely known.

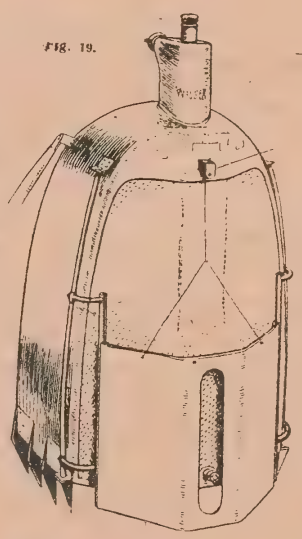
In front of the pilot is a dashboard arranged as shown in Fig. 27, containing the usual switches, gauges, instruments and control taps. One of the latter is shown in more detail in Fig. 28.

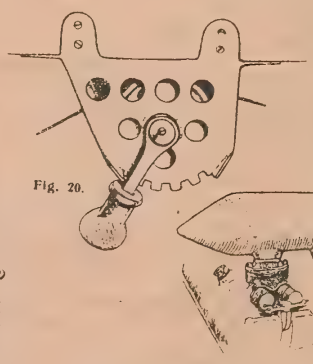
Petrol System

The two main petrol tanks carried in the forward portion of the fuselage are equal in size, and have a joint capacity of 175 gallons. They are made of sheet brass, and appear to be well provided with internal baffle plates

On the left-hand upper wing, slightly to one side of the centre line of the machine, is a streamline gravity tank, strapped on to the upper surface, above which it projects; this gravity tank,


Fig. 18.


Fig. 19.


Fig. 20.

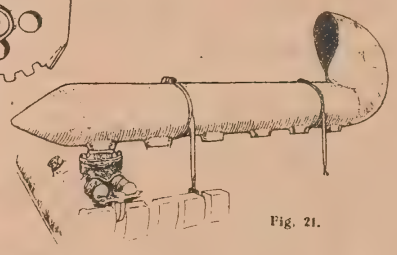
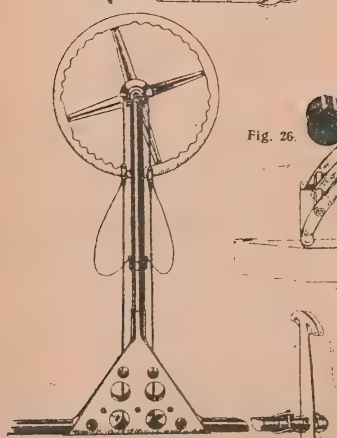

Fig. 21.


Fig. 22.


Fig. 23.

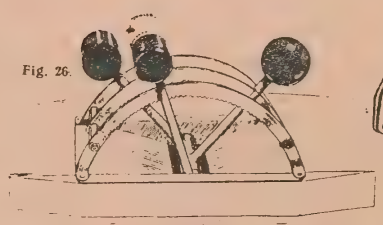
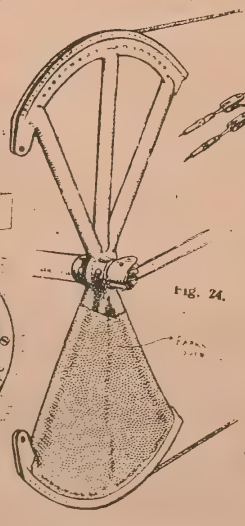
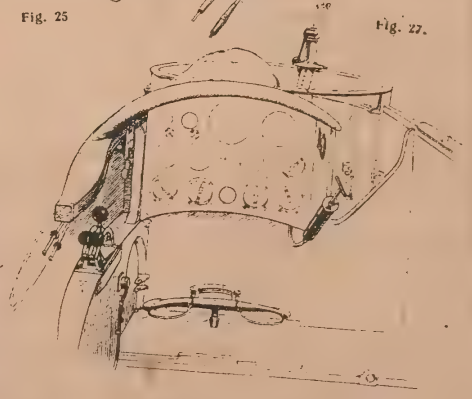

Fig. 26.


Fig. 25.


Fig. 24.


Fig. 27.

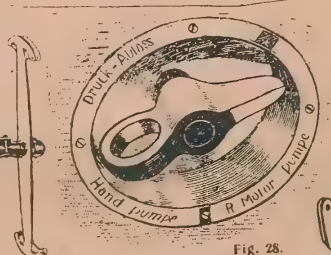
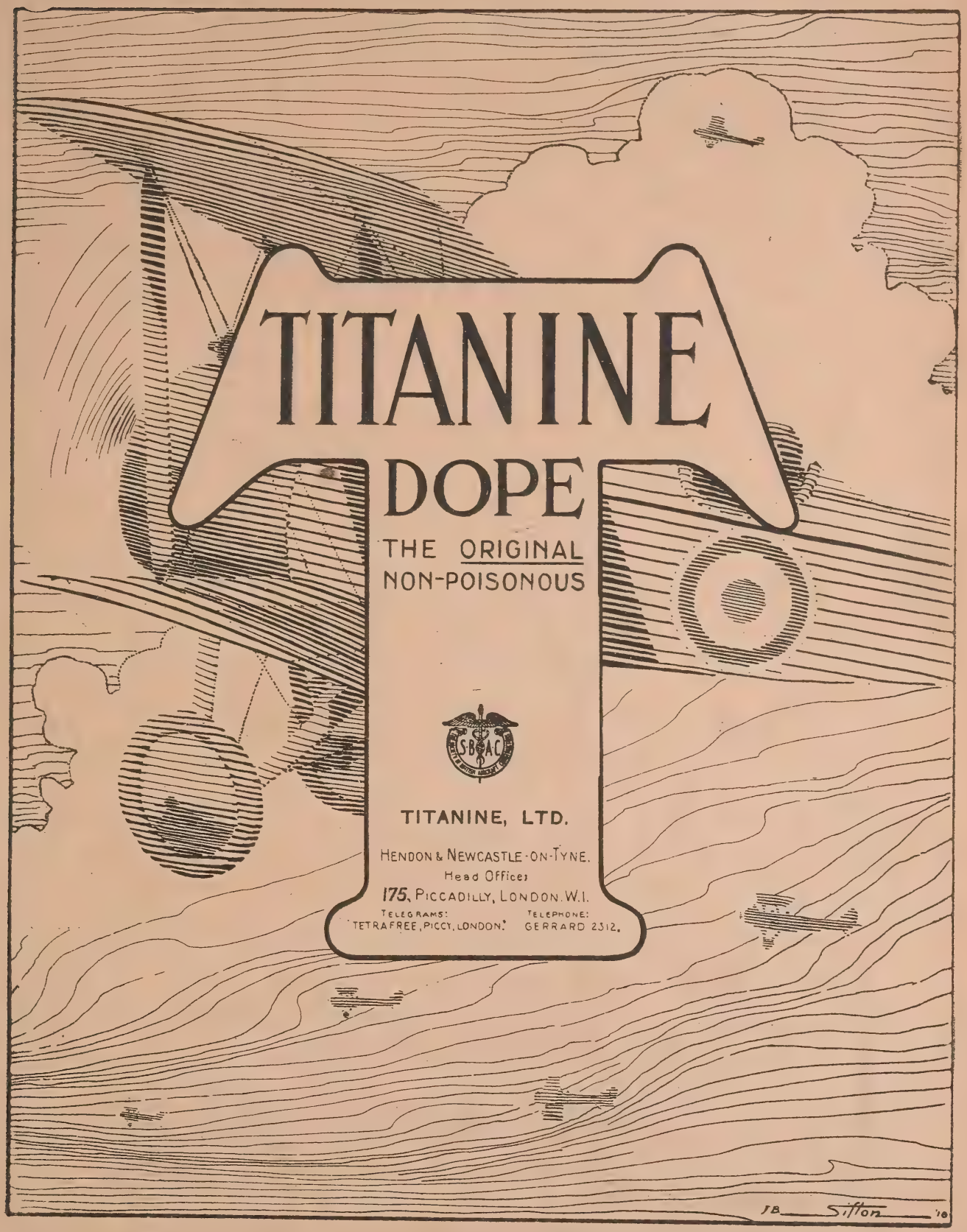


Fig. 28.


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which is used solely for starting purposes, has a capacity of about 10 gallons. It is filled from one or other of the main tanks by means of a hand-operated suction pump mounted on the right-hand side of the pilot's dash-board, as shown in Fig. 27.

The two main tanks work under pressure; an air pump of the usual type is mounted within reach of the pilot.

ARMAMENT.

Two Parabellum guns are carried—one in the forward cockpit, and one in the rear. The former is carried on a large ring mounting, which is shown in Figs. 29 and 30. In order to allow access between this cockpit and that of the pilot, part of the ring is made to hinge out of the way like the flap of a counter. The ring is extensively perforated with countersunk holes, apparently for lightening purposes. The holes of the hinged portion, together with the latch which secures them, are shown in Fig. 31. The gun is carried on a universally jointed bracket of the accepted design, which is furnished with an inclined extension, supported from the floor of the fuselage by a foot-step bearing.

The gun-carrier is fitted with two steel rollers, which rest on the ring mounting, outside of which is mounted a gallery of light metal fitted with numerous holes for the reception of Verey pistol ammunition.

The rear gun is carried on a forked bracket, which slides over two rails made of bent steel tube, and mounted on the top surface of the fuselage as illustrated in Fig. 7. This gun-carriage has a very limited arc of motion, and the usual expanded metal shields are fitted to prevent the gunner firing at the airscrew, and possibly to prevent him leaning out far enough to be in danger of being struck by one of the blades.

On the floor of the after-gunner's cockpit and close to the edge of the tunnel is a bracket designed for the reception of a second gun which would fire in a similar manner to that which was fitted on the earlier Gotha types. No guns fixed in this position have been found, and it is evident, therefore, that the upper gun is relied upon to answer all defensive requirements.

BOMBS.

The number and type of bombs carried on Gotha aeroplanes varies considerably, and the carriers are in consequence adapted to be easily removed and replaced by others of larger or smaller size, as the case may be.

The carriers used on the Gotha are exactly similar to those which have been found on A.E.G. and Friedrichshafen machines, and present no new features, with this exception, that on the Gotha each carrier is furnished with an electrical detector device which informs the bomber that the projectile has actually left the carrier. This detector consists of a small switch, details of which are shown in Figs. 32 and 33, so that when the bomb leaves the carrier an electric lamp is illuminated inside the forward cockpit; this is carried out by means of a small spring-operated plunger switch.

As a rule, eight bombs, each of 100 kg. weight, are carried—two being supported directly under the fuselage, and three on either side of the bottom plane centre section. Their release is effected by six small levers working the release gear through wires; each of these levers is painted a characteristic colour, and they are furthermore of different lengths, so that the bomber has no difficulty in pulling the right one. It would appear that each bomb carried on the centre section of the lower plane is released separately, and that probably the two bombs underneath the fuselage are discharged simultaneously. The levers are shown at the back of Fig. 34, which also illustrates the folding seat and the communication flap, between the bomber's cockpit and that of the pilot. Both the forward cockpits are furnished with large celluloid windows, which have been blacked over in all cases so as to be opaque.

WIRELESS.

The machine is internally wired throughout for giving greater wireless capacity, and the dynamo for the system is driven direct by one of the engines. It also furnishes current for the heating of passengers' clothing, for which plugs are arranged at convenient points.

It will be noted in Fig. 34 that the floor in the corner of the cockpit is dished for the reception of the apparatus which carries the bobbin and the aerial wire.

INSTRUMENTS.

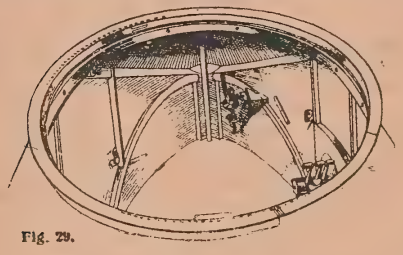
The usual array of engine revolution counters, thermometers, pressure gauges, etc., is fitted on the Gotha, but no new types were found.

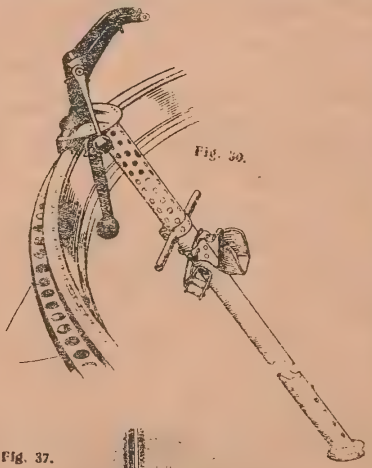
FABRIC AND DOPE.

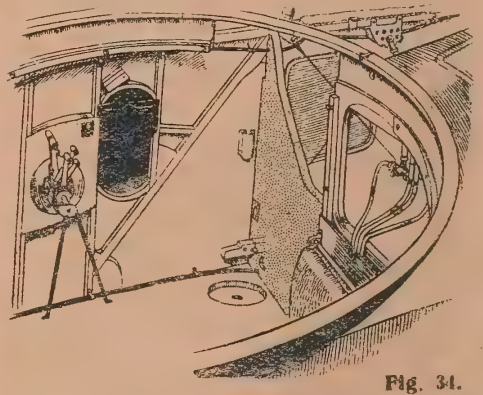
Both the fabric and dope on the Gotha aeroplanes conform to the usual German standard. The camouflage is similar to that of the Friedrichshafen, and consists of irregular polygons of various dark colours, which are printed on the fabric.

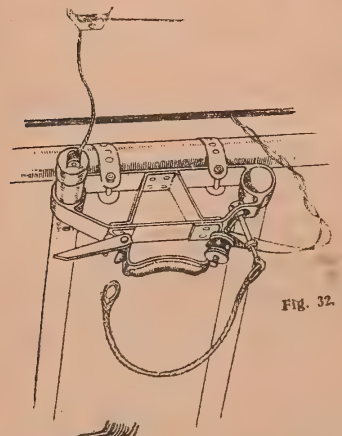
GOTHA BROUGHT DOWN BY FRENCH A.A. FIRE NEAR CROCHTE ON JULY 4th-5th, 1918.

The general construction of this machine appears to be similar to that described above in most respects, except for three modifications, which are worthy of note:—


Fig. 29.


Fig. 30.


Fig. 34.


Fig. 32.

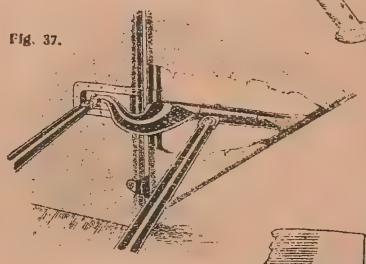
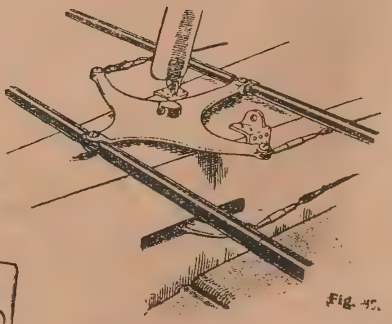
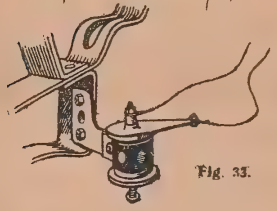
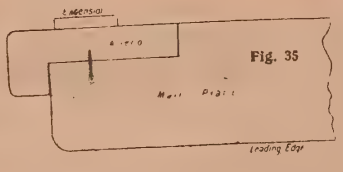
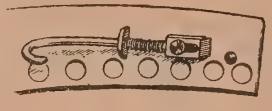

Fig. 37.


Fig 31


Fig. 40.


Fig. 33.


Fig. 35



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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

1. A biplane tail unit. It is similar in design to that of the Handley-Page, and embodies two fins on either side of the fuselage between the planes of the tail. The rudders are hinged to the trailing edges of these fins. The measurements of the tail unit are as follows :—

Top elevator span	5 ft. 7 ins.
Top elevator chord	2 ft. 7 ins.
Bottom elevator span	5 ft. 3 ins.
Bottom elevator chord	1 ft. 6½ ins.
Balance piece	11½ ins. by 10¾ ins.
Gap	2 ft. 9½ ins.
Bottom tail planes each average fore and aft measurement	2 ft. 5 ins.
Span along trailing edge, each	4 ft. 2 ins.
Top tail plane, average fore and aft measurement	2 ft. 5 ins
Span along trailing edge	8 ft. 10 ins

This tail unit would appear to have been adapted in order to give the after gunner a better chance of attacking chasing aeroplanes, as the span is considerably smaller than that of the monoplane tail. It is constructed throughout of steel tubing.

2. Extensions are fitted to the top ailerons as shown in the attached diagram (Fig. 35); it would appear from these that the lateral control of the Gotha has been found insufficient.

3. The undercarriages are arranged in a similar manner to those of the Friedrichshafen, that is to say, there is a two-wheeled undercarriage underneath each engine, and a third two-wheeled axle mounted on to the fore part of the fuselage; the wheels throughout are of equal size, carrying 810 by 125 mm. tyres.

Some details of the tail control are given in Figs. 36 and 37, from which it will be seen that double-ended levers with tubular tie rods are adopted for the rudders.

THE FOUR-ENGINED GIANT.

There are known to be a number of different types of giant bomb-carrying aeroplanes, distinguished by the four, five, or six engines with which they are fitted.

Examples of four-engined and five-engined aeroplanes have been brought down, but unfortunately, in all cases, in such a damaged condition that complete reconstruction is impossible.

The following particulars relate to a four-engined machine which landed near Berz on the night of June 1st. It was almost completely burnt by its occupants, and the metal parts alone remain, together with a few fragments of the body work.

The general arrangement of this aeroplane, together with the principal dimensions is given in Fig. 38.

In contra-distinction to the two-engined machine, there is considerably more steel in the construction, and this material is used in place of wood for the rear portion of the fuselage.

The principal point of interest is the mounting of the four engines, all of which are of the 260 h.p. Maybach type, six cylinders in a line; the horse-power has been forced up to 300, giving 1,200 h.p. in all. They are placed end to end, as shown in Fig. 38, and each drives a separate screw.

In order to bring the centre of gravity of the machine sufficiently far forward, the weight of the two engines is massed towards the leading edge of the main plane; by driving the screws through shafts and reduction gears, the necessity of cutting away large sections from the planes to give room for the rear airscrews has been avoided.

The arrangement of the engine unit on each side of the fuselage is diagrammatically shown in Fig. 38, from which it will be seen that the two engines are placed close together, and that the rear motor is some little distance away from its screw. The forward engine is, however, mounted close up to the tractor screw.

The employment of shafts and reduction gears necessitates flywheels on the engines. These are 0.4 metre in diameter, and made of cast iron. The tubular driving shafts between the flywheel and the gear box are furnished with flexible leather couplings. These are of a novel type, and consist of a male and female drum, each furnished with circumferential notches, between which are interposed a series of flat leather strips. The female drum forms part of the fly-wheel.

The gear box consists of a casing of aluminium, provided with cooling fins.

Beneath each gear-case is a small radiator for cooling the lubricating oil circulated through the engine. This radiator consists apparently of a flat semi-circular tank, fitted with numerous transverse tubes of fairly large diameter (about 25 mm.) in a manner similar to that of a honeycomb-radiator. A pump mounted at the base of the radiator is also furnished with an electrical thermometer giving a reading on a dial in the cockpit.

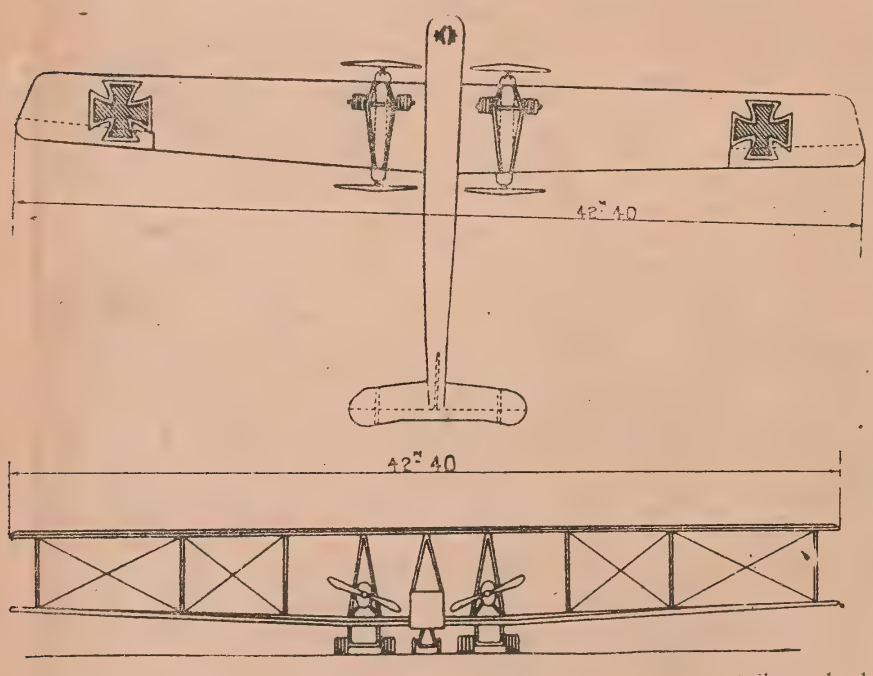


Fig. 38.

Each engine is fitted with a self-starting arrangement of the type usually fitted to Maybach motors. The exhaust pipe may be closed by means of a shutter, and all the cylinders can be filled with gas from the carburetter by means of a large hand-pump, for which purpose all the valves are held open. When these valves are closed and the starting magneto operated, the engine fires and continues running. Each engine has its own radiator, which is mounted directly above it, and supported by struts and stay wires at a point about half-way between the top and bottom planes. These radiators are of the type usually fitted to D.F.W. machines. They are rectangular in shape, with their greater length placed horizontally, and the radiating surface consists of a series of zig-zag tubes placed vertically.

The engine bearers consist of stout ash spars, reinforced with multi-ply wood. Owing to the burnt condition of the machine no information could be obtained as to the engine controls, and the screws were also too badly damaged to yield definite information as to dimension and construction, though they appear to be made chiefly of ash and covered with a thin veneer.

Wing Construction.

The spars are shown in Fig. 40, built up very elaborately in sections, and consisting of no less than seven sections of spruce, reinforced with multi-ply on each side, and finally carefully bound with doped fabric.

The spars of the lower wings are continuous, that is to say, they run right across the centre section of the fuselage, to the longerons of which they are secured, contrary to the usual practice, in which special compression members, forming part of the fuselage construction, are employed. The wing surface, both upper and lower, is divided into three sections, of which the middle section extends to the engine mountings on each side.

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The spars in this section are both at right angles to the axis of the fuselage. At each side of the middle section the leading edge of the wings is boldly swept back as well as tapered. The rear spars of the wings, together with those of the centre section, form a straight line from wing-tip to wing-tip, but the front spars are swept back.

[These are shown in precisely the opposite sense in the official sketch herewith.—C. G. G.]

The ribs, of which a detail drawing is given in Fig. 42, are built up, and of girder form.

Between the leading edge and the leading spar, numerous extra ribs occur in addition to the main ribs. Internal bracing against drag takes the form of steel tubular compression members and steel cables, the former being placed at a point coincident with the attachment of each interplane strut. An additional bracing is installed, of which the compression member consists of a double rib placed half-way between the struts. In each case the bracing wires pass obliquely right through the spars.

The ribs are mounted parallel to the line of flight.

The disposal of the spars is as follows:—

TOP PLANE.

Leading edge to centre of leading spar	1 ft. 9½ ins
Distance between centres of spars	5 ft. 7⅓ ins.
Trailing edge to centre of rear main spar	5 ft.

BOTTOM PLANE.

Leading edge to centre of leading spar	1 ft. 7⅓ ins
Distances between centres of main spars	5 ft. 1 in.
Trailing edge to centre of rear main spar	5 ft. (approximately).

The trailing edge of this aeroplane was too badly damaged to permit of this measurement being given accurately.

Between the interplane struts the rear spars are thinned down in width, but their depth remains practically constant from root to tip. Such tapering as exists is so arranged as to promote a decided wash-out of the angle of incidence near the tip. This is done by tapering the front spar on its upper edge, and the rear spar on its lower edge.

AILERONS.

These are of large-diameter steel tube, covered in with a framework of steel tubing. They are not balanced, and the controls are led in the usual manner through the bottom plane from the aileron lever.

The span of each aileron is 22 ft. 5 in., and the chord 3 ft. 4 ins.

INTER-PLANE STRUTS.

These are of large-diameter steel tube, covered in with a streamline fairing consisting of three-ply mounted on a light rib-work of wood.

BRACING.

The attachment of the bracing cables to the spars is somewhat similar to the bracing of the Fokker fuselage; that is to say, the wires, instead of being anchored at each end to an eye-bolt, are double, and are looped round the spar, to which is fixed a grooved channel-piece for the reception of the cable. It is difficult to see that any advantage is gained by this arrangement.

TAIL UNIT.

A biplane tail, somewhat similar to that of the Handley-Page, is fitted. The fixed tail planes, the angle of incidence of which can be adjusted through small limits, are of wooden construction, and have the following dimensions:—

Span each side of fuselage	12 ft. 4 ins.
Chord (average)	4 ft. 10 ins.
Gap	6 ft. 9½ ins.

ELEVATORS.

These are fitted to both the top and bottom tail planes, and are of aluminium construction, the ribs, being of girder form, somewhat similar in construction to the ribs of the main planes. The elevators are not balanced; the top and bottom elevators are fitted with independent control levers, but are presumably operated together from the control stick. Their dimensions are as follows:—

Span	28 ft. 6 ins.
Chord at tip	2 ft. 4 ins.
Chord at centre	1 ft. 6 ins.

FINS.

There are three fins; two outer ones forming interplane struts, and an inner central one of triangular shape.

RUDDERS.

The framework of these organs is built up of aluminium in the manner set forth in detail in Fig. 43. This also shows the quadrant at the foot of the rudder posts by means of which they are operated; each rudder post is fitted with ball-bearings, both top and bottom.

UNDERCARRIAGE.

Beneath each engine section is an undercarriage consisting of a massive axle fitted with four wheels at each end. This axle is attached by india-rubber shock absorbers to the tubular steel V-struts which form extensions of the engine-bearer struts. A third undercarriage is mounted under the forward part of the fuselage, and consists of an axle with one pair of wheels.

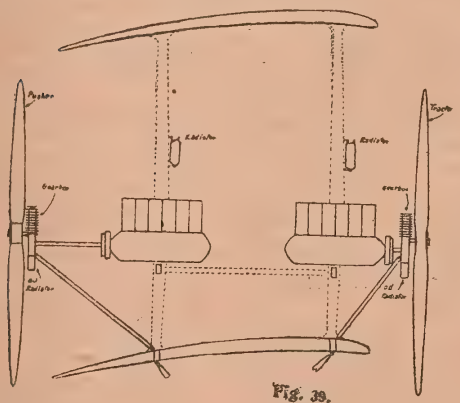


Fig. 39.

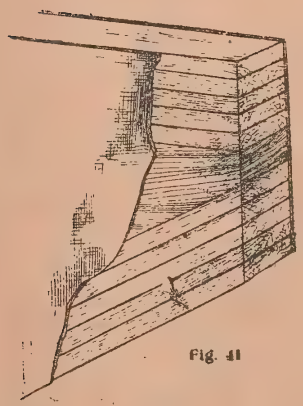


Fig. 41

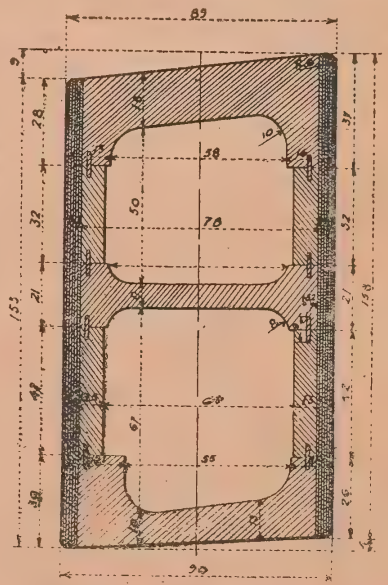
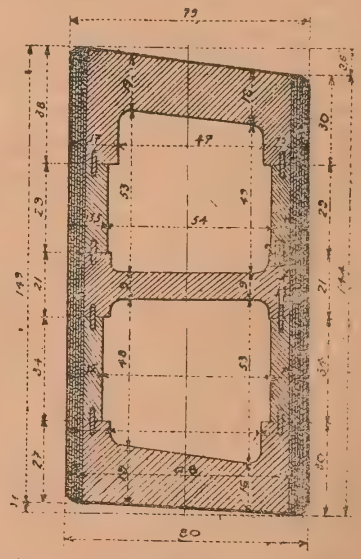


Fig. 43.



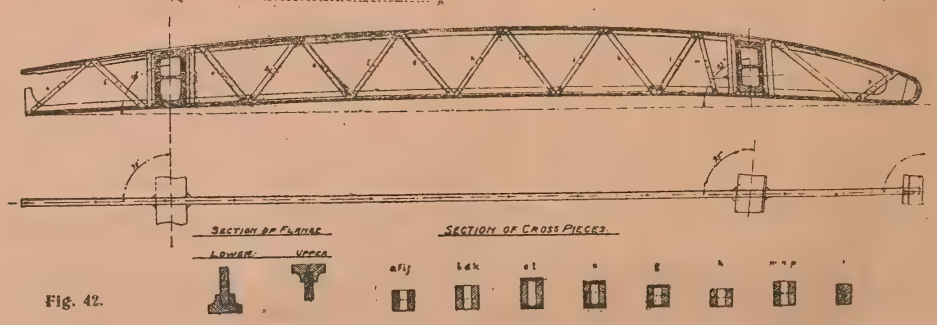


Fig. 42.



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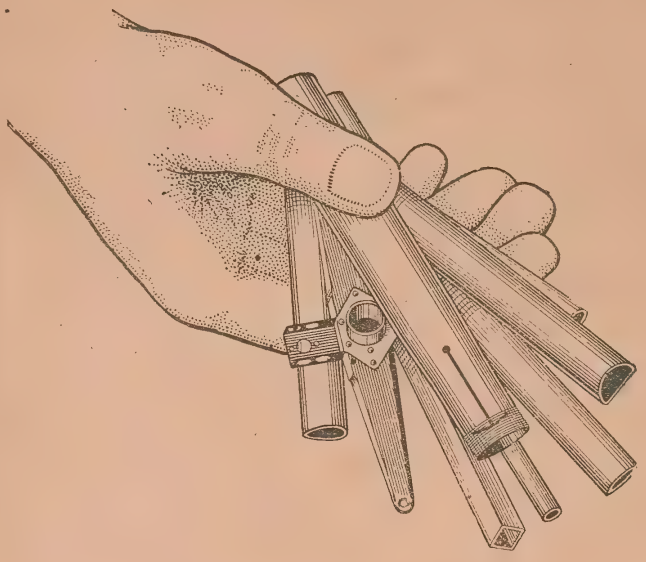
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Lodge Sparking Plug Co., Ltd., Rugby. "Igniter, Rugby." Rugby 335.
Ripault, Leo. & Co., Ltd. (Oleo Plugs), 648, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.
The Robin Hood Engineering Works, Ltd., Newlands, Putney Vale, S.W. 15. "Kaelgee, Phone, London." Putney 2132-3.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Springs—
Dart Spring Co., West Bromwich "Dart, West Bromwich." West Bromwich 322.
Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—
Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.
Brown Bros., Ltd., Gt. Eastern St., E.C.1. Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.
Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Steel Stamps and Markings—
John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—
Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham" Kings Norton 261-262.

Tapes and Smallwares—
MacLennan, John, & Co., 40, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—
Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526
Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 406
Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—
Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Rubery Owen & Co., Darlaston, South Staffs.
Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—
The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent" Gerrard 1214 (5 lines).

Undercarriages—
Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—
The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.
Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.
Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45 Wimbledon 45 and 1395.
Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 40

Vices—
Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95. Avenue 1432.

Washers—
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers— (Silver Models)—
Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—
Acetylene Corporation of Great Britain, Ltd., The, 40, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4[illegible]
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—
Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—
Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5918.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10 "Rodynalite, Phone, London." Willesden 2480.
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Wire Gauze—
Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setsure, Finsquare, London." London Wall 1085

Wires and Cables—
Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield" Wakefield 466 (3 lines)

Wirework—
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—
Robinson, Thomas, & Son, Ltd., Rochdale "Robinson, Rochdale." Rochdale 467
Sagar, J., & Co., Ltd., Halifax. "Saw tooth, Halifax." Halifax 136
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614





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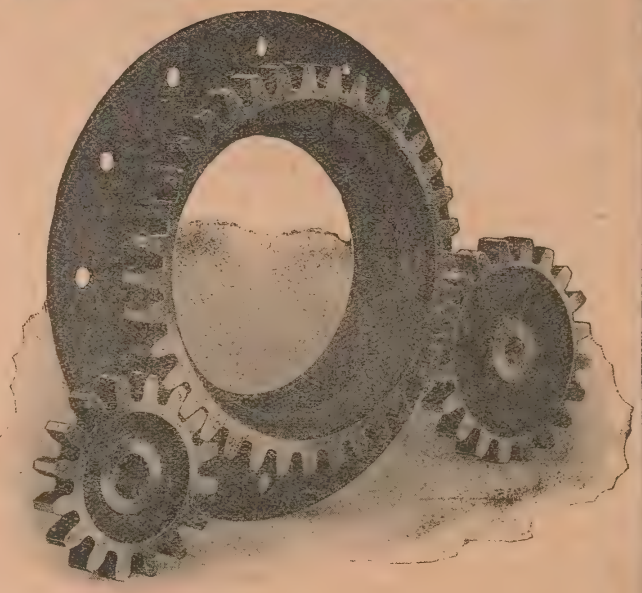
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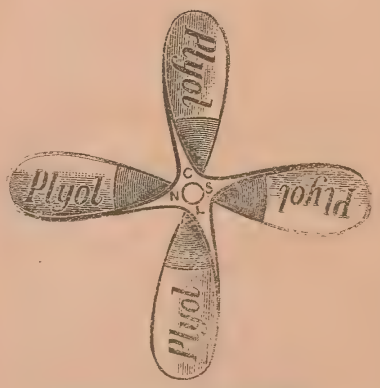


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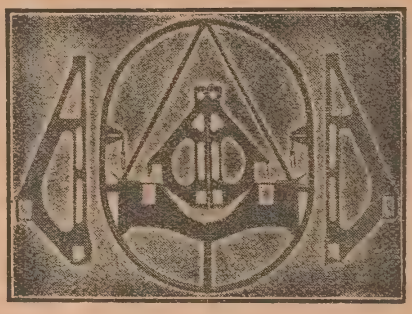
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Armament.

Only two gun mountings were found in the wreckage; they were fited to a revolving turret in the gunner's cockpit. The mountings are of the fork type, and are situated on opposite sides of the circle. No arrangements for firing under the tail were found, nor was there evidence of a forward gun mounting.

Bomb Gear.

Two steel tubular frameworks are fitted, one on either side of the fuselage. They are apparently adapted to carry very large bombs, probably of 1,000 kg. each; the release gear appears to be similar to that used on the Friedrichshafen, and already reported upon.

THE FIVE-ENGINED GIANT.

A 5-engined bomber was brought down near Talmas on Aug. 10th, but unfortunately, owing to the explosion of one of its bombs, the machine was damaged beyond hope of reconstruction.

Some of its components have been recovered.

The principal item of interest is the gear box, which is used for all five engines, each of which is a 300-h.p. Maybach of the standard 6-cylinder vertical type.

The power plants are arranged as follows:—In the nose of the machine is one engine driving a tractor screw. On each side of the fuselage, supported by the wings, is a long pair of engine bearers carrying two engines apiece, which drive tractor and pusher screws in a manner exactly similar to that set forth in Fig. 38.

The use of the gear box and driving shafts necessitates the employment of a fly-wheel on the engine, to which is added the female portion of a flexible coupling of the type already described.

Whereas the gear box in the 4-engined Giant, of which notes have already been given in this report, is of a somewhat crude type employing external driving shafts between the gear box and the engine, in the 5-engined machine the gear-box design is considerably improved. The casing consists, as shown in the photograph on page 1912, of a massive aluminium casting provided with four feet which are bolted to the engine bearers.

Two kinds of gear boxes are employed. These differ only in over-all dimensions and the length of the propeller shaft.

The larger type is used for the pusher screw in order to obviate the necessity of cutting a slice out of the trailing edge of the main planes.

All the gear boxes were very badly damaged except that which is shown on page 1912. This is the longer type, but it would appear that the shorter design is very similar in appearance.

In each case the gear reduction is 21—41.

Plain spur pinions are used having a pitch of 22 mm. and a width across the teeth of 75 mm. The diameter of the smaller of the driving pinions is 162.5 mm., and that of the larger pinion 282 mm.

The larger pinion is as shown in the photograph, considerably dished, but the web is not lightened by any perforations.

The over-all dimensions of the gear box is as follows:—

Length, 1,025 mm.
Breadth, 675 mm.
Height, 535 mm.

The driving pinion runs on two large diameter roller bearings carried in gunmetal housings supported in the inner end of the gear box. This part is split vertically, and united by the usual transverse bolts, whilst the conical-shaped portion of the box is solid. The usual oil-thrower rings of helical type are fitted.

At its outer end the pinion shaft terminates in a ring of serrations which engage with serrations provided in the male portion of the flexible coupling, these two parts being held together with bolts and clamping plates. The engine is thus close up against the gear box, in contradistinction to the design of the 4-engine power plant. There is practically no external shaft at all. The larger pinion is mounted on a hollow shaft of 92 mm. diameter, carried on roller bearings at each end for radial load, and furnished at the nose end with ball thrust bearings.

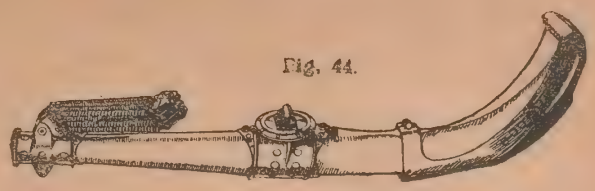


Fig. 44.

In the short type of gear box the larger pinion shaft is left solid, and it would appear that the gear box casing, instead of being made in three pieces, is made in two pieces, i.e., the whole box is simply split vertically.

Reference to the photograph will show that the smaller pinion shaft projects right through the gear box, and at its outer end carries a projection fitted with a small ball thrust race. This projection acts as a drive for the oil pump, which is mounted on the oil radiator used in connection with each gear box.

It is worthy of notice that the German designers have now fully realised the importance of using geared engines for weight carrying aeroplanes, and are apparently satisfied with the external gear-box principle, although in this case they have made it a very ponderous affair indeed. Needless to say, a great amount of the weight could have been saved if 12-cylinder engines had been used instead of 6-cylinder.

The weights of the gear box and its attachments are as follows:—

Gear box, long type, 280 lbs.
Fly wheel and female clutch, 44 lbs.
Male clutch, 5 lbs.
Oil radiator, 12½ lbs.

This it will be seen represents an additional weight of considerably more than 1 lb. per h.p.

The oil radiator used in conjunction with each gear box is of a roughly semi-circular shape, and is slung underneath the main transverse members of the engine bearers so that it comes immediately beneath the large feet of the gear box, as shown. This radiator is entirely of steel construction, and embraces 65 tubes of approximately 20 mm. internal diameter. These are expanded and sweated into the end plates, to one of which is fitted a stout flange, against which is bolted a small gear pump which constantly circulates the oil from the gear box case through the radiator.

This gear pump is driven by a flexible shaft from the small pinion, the shaft and its casing being in all respects similar to those employed for engine revolution counters. As shown in the photograph illustrating the complete gear box upside down, this flexible drive is taken off a small worm gear.

It will also be seen that underneath the oil sump of the gear box proper an electrical thermometer is fitted, which communicates with a dial on the dashboard.

It is a little difficult to see what object can be served by this thermometer unless it be to indicate the desirability of throttling down a little in the event of the oil getting unduly hot, as there is no apparent means of controlling the draught of air through the oil radiator.

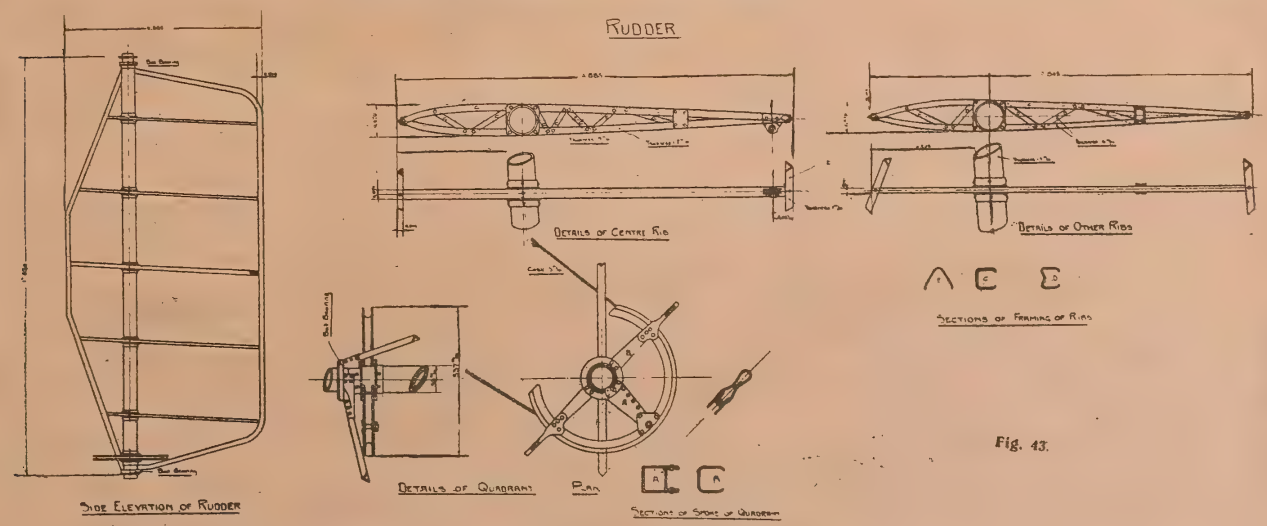


Fig. 43.

Fitted on each gear box and working in connection with the oil circulation is a filter. This is provided with an aluminium case and a detachable gauze cylinder through which the oil passes.

The arrangement of the gear box is such that the axis of the airscrew is raised about 220 mm. above that of the engine crankshaft.

The construction of the long engine bearers is not without interest, as amongst other things, it indicates that German manufacturers are finding themselves short of suitable timber. Each bearer, as shown in Fig. 41, consists of a spruce or pine central portion, to which are applied, top and bottom, five laminations of ash. On each side are glued panels of 3-ply, about $\frac{1}{8}$ in. thick.

The engine bearers taper sharply at each end, and are strengthened by massive steel girders under each gear box

The screws revolve at approximately half the speed of the engine, and having therefore a moderately light centrifugal load to carry, are made of a common wood that would scarcely be safe for direct driving screws.

Although fitted to 300 h.p. Maybach engines, they are marked 260 p.s. (h.p.) Mercédès. The diameter is 4.30 metres, and the pitch 3.30, for the pusher screw, but unfortunately, owing to the airscrews being badly damaged, not only by the crash, but by fire, it is not possible to state whether the tractor screws are of the same dimensions and pitch.

The construction is very interesting; each screw is made of seventeen laminations of what appears to be soft pine, and these laminations are themselves in pieces, and do not run continuously from tip to tip. They are, of course, staggered, so that the joints in successive layers do not coincde. Two plies of very thin birch veneer are wrapped round the blades. The grain of this veneer runs across the blade instead of along it.

It is difficult to say from the appearance of the screw whether this veneer has been put on in the form of two-ply or as two separate layers, one after the other.

Among other details salved from the wreckage is the engine control. This is a very massive affair. It consists of five stout steel tubular levers, two of which have become unbrazed in the fire which broke out when the machine crashed.

The levers are fitted with ratchets so that each one can be operated individually, but the presence of a large single-diameter toothed wheel in the centre of the lever shaft would seem to indicate that all five levers could, when desired, be controlled simultaneously. This fitting had, however, been very badly fused, and it is impossible to give details with certainty.

A smaller fitting recovered from the wreckage consists of a windmill of a type similar to that used on the D.H.9 aeroplane. It is mounted at the top of an aluminium tube, but it is not possible to say for what purpose this mill is employed.

A small and very heavy rotary pump was found in the wreckage. This is possibly the hand-driven petrol pump, though it would appear unusually massive for this purpose.

The Douglas type of engine, carried for the purpose of driving the dynamo of the wireless and heating installation, is a very close copy of the $2\frac{3}{4}$ h.p. Douglas, and is made by Bosch. The fly-wheel is furnished with radial vanes which induce a draught through a sheet-iron casing, and direct it past cowls on to the cylinder heads and valve chests.

The generator is direct-driven through the medium of a pack of flat leaf springs, which act as dogs, and engage with the slots on the fly-wheel boss.

What appears to be a transformer, used in conjunction with the wireless set, was found.

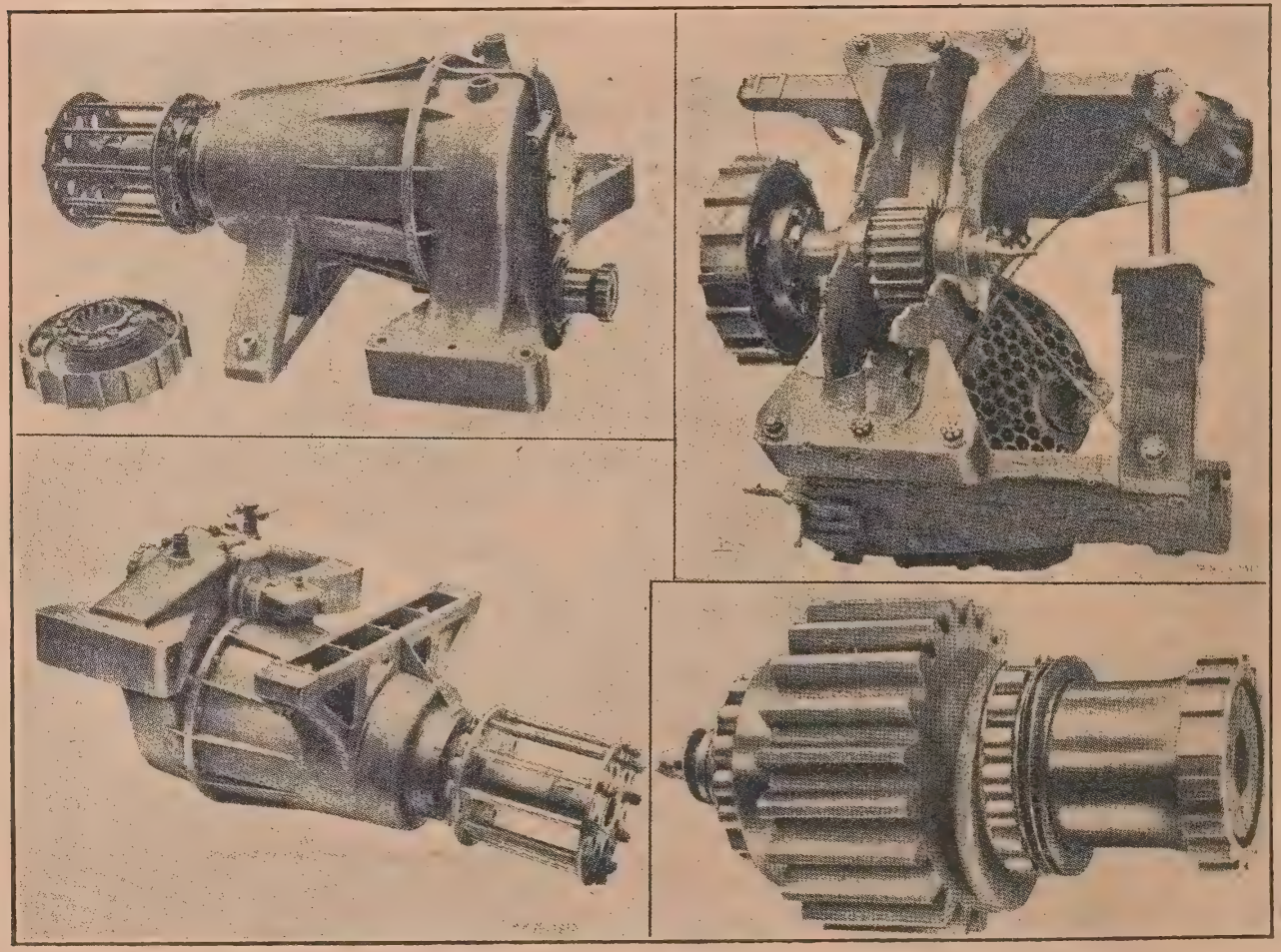
The ponderous tail skid of this machine is illustrated in Fig. 44. It is built up of laminations of ash, and furnished with a heavy steel shoe and a large universal attachment.

Special Note.

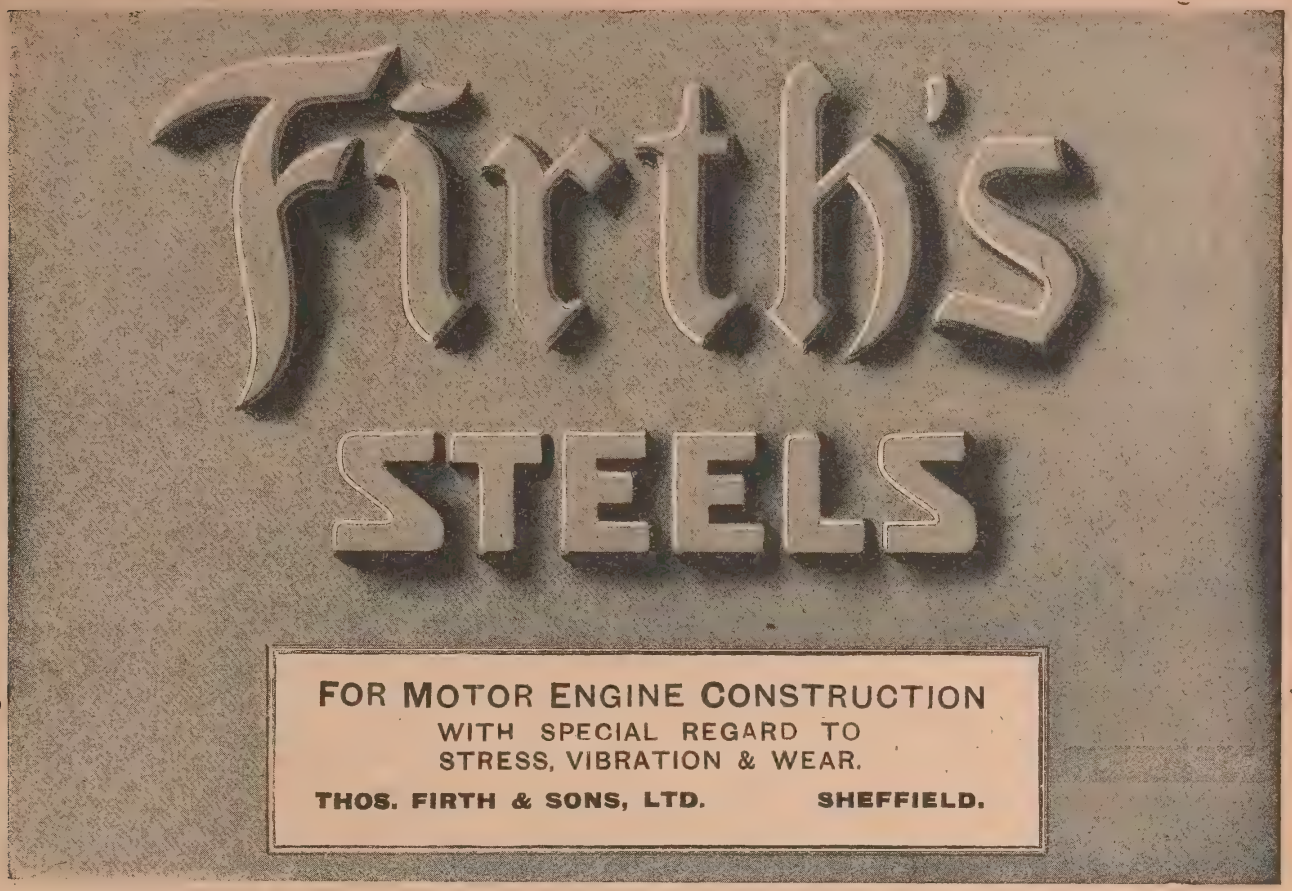
A complete and detailed report on the above-mentioned gear box, giving the fullest possible information and analysis of metals, etc., will shortly be published.

W. G. A.,
Ap., D. (L.)

J. G. Weir,
Brig.-Gen.,
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Photographs illustrating the gear-box employed on the engines of the five-engined Giant.



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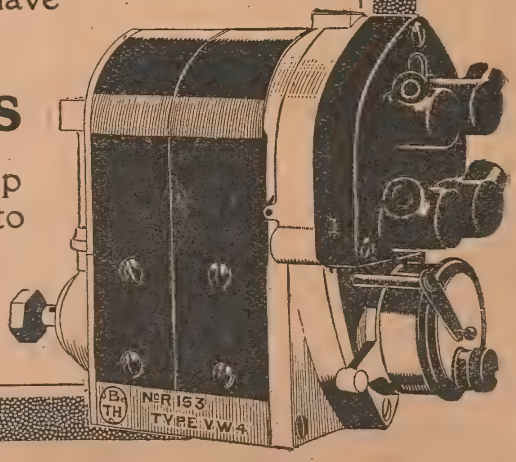
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THE PATENTS INDEX.

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PATENTS APPLICATIONS.

Ayling, G. Construction of strut spar, etc., for aeronautical machines. No. 18199. Nov. 6th.
Barncastle, H. J. D. Mounting and control of machine guns on aircraft. No. 18258. Nov. 7th.
Beck, A. Dope for aeroplanes. No. 18373. Nov 9th.
Bostock, S. H. Hulls of aircraft. No. 18053. Nov. 4th.
Calthrop, E. R. Safety-devices for aviators. No. 18333. Nov. 8th.
Campling, G. Internal-combustion engine construction for aerial vehicles. No. 17978. Nov. 4th.
Edgar, E. J. Wheels for aircraft. No. 18387. Nov. 9th.
Ferguson, G C. Lateral level for aeroplanes, etc. No. 18121. Nov. 5th.
Hinchcliffe, H. Tie rods, wires, etc., for aircraft. No. 18276. Nov. 8th.
Hiscocks, S. W. Wheels for aircraft. No. 18387 Nov. 9th.
James Cycle Co. Machine, anti-aircraft, etc., guns. No. 18316. Nov. 8th.
James Cycle Co. Machine, anti-aircraft, etc., guns. No. 18317. Nov. 8th.
James Cycle Co. Machine, anti-aircraft, etc., guns. No. 18318. Nov. 8th.
Leigh, A. G. Aeroplanes. No. 18035. Nov. 4th.
Mortley, G. E. Aeronautical dynamos. No. 18108. Nov. 5th.
Ricardo, H. R. Mounting of propellers for aircraft. No. 18332. Nov. 8th.
Sanford, F. T. Safety-control for aeroplanes. No. 18109. Nov. 5th.
Smith, W. S. Gyroscopic compasses for aircraft, etc. No. 18200. Nov. 6th.
Soc. des Moteurs Salmson. Apparatus for increasing range of speed of aeroplanes. No. 18037. Nov. 4th.
Wightman, J. C. Jigs for drilling aeroplane turnbuckles, pins, ets. No. 18090. Nov. 5th.

COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER NOV. 28TH, 1918.

106,486. May 1st, 1916. Vedrines, J., and Astoux, L. L. Wing systems for aeroplanes.
120,218. July 12th, 1917. Dunkly, J. J. R. Means for preventing cracking or bursting of engine cylinder heads, pipes, and the like by freezing.
120,252. Oct. 30th, 1917. Katayama, H. Means for raising submerged vessels by means of aircraft.
120,275. Nov. 9th, 1917. Davis, W. H. Inclination indicator for aircraft, ships, and other moving bodies.
120,298. Dec. 19th, 1917. Saunders, S. E. Airships.
120,311. Jan. 29th, 1918. Johansson, C. A. Devices for stabilisation of aeroplanes.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

119,046. Motor power plant. DOUGLAS, C. D., Shirley, Beechcroft Road, Watford, Hertfordshire.

A motor installation particularly applicable to aircraft comprises a combined internal-combustion engine and air-compressor *a*, having cylinders arranged at right-angles to one another as shown or otherwise, which delivers compressed air by way of reservoirs *b*, a pipe *f*, and a heater *c* of special construction to an engine *g*, which may be a turbine of the circular-flow type having repeated impact. The air-heater *c*, Fig. 3, consists of an asbestos-lined box traversed by the air-tubes, which are heated by a regulable petrol or gas burner *h* having an electric igniter *i*.

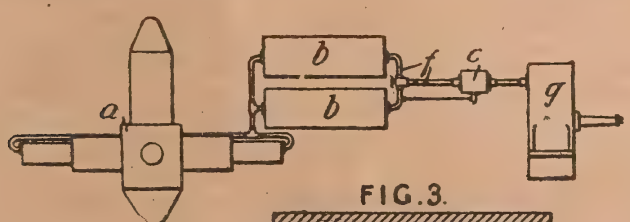
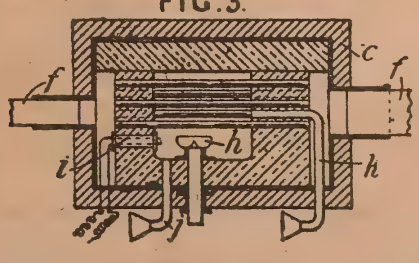
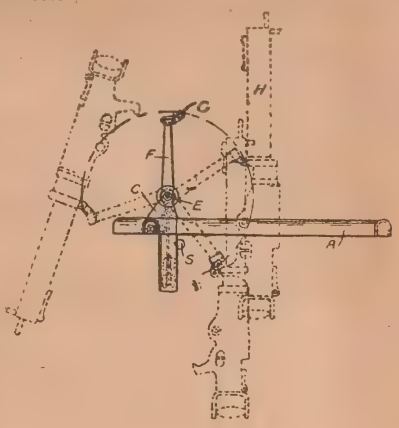


FIG. 3.

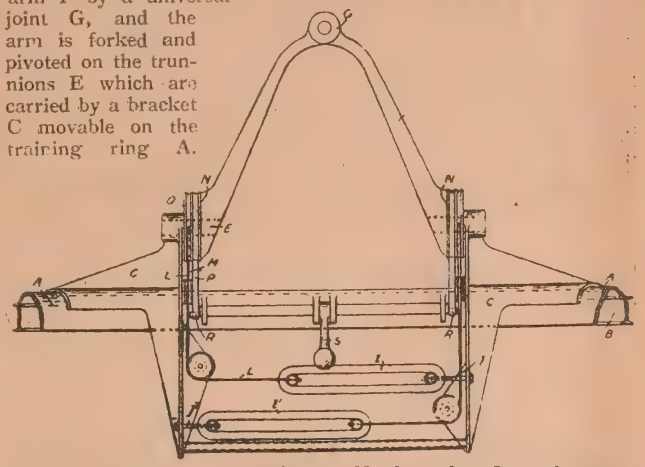


Air for combustion is supplied through a pipe *j*, the combustion products escaping through a pipe *k*.

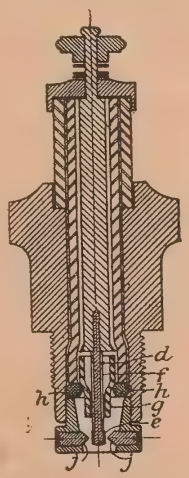
119,043. Gun mountings. ROE, A. V., Avro Aeroplane Works, Newton Heath, Manchester.



Relates to mountings especially for use on aircraft and comprising an arm carrying the gun at one end and pivoted at the other end on horizontal trunnions on a bracket carried by a ring with rollers adapted to be trained around a base ring. According to the invention, the arm F, Fig. 4, is arranged to turn about the horizontal trunnions E with a very full travel The gun H is connected to the arm F by a universal joint G, and the arm is forked and pivoted on the trunnions E which are carried by a bracket C movable on the training ring A.



Bands P, Fig. 1, on drums N for clamping the trunnion bearings E are actuated by eccentrics R and a handle S, which serves also to clamp the training ring A to the base ring B by means of a cam and wedge. The weight of the gun about the trunnions E is balanced by the tension of rubber bands *i*, i^1, each of which is connected by a pair of straps L, M to opposite points of drums O on the trunnions. The tension of the bands is adjusted by screws *j*, j^1.



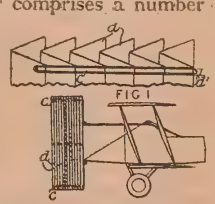
119,073. Sparking-plugs TURNBULL, G. E., 24, Reading Road, Henley-on-Thames, Oxfordshire.

The insulation consists of silica or fused quartz. The inner portion *d* of the central conductor carries a nickel or like electrode *e* and is insulated from surface leakage by a tube *f* or sleeve *g*, the latter being retained by a washer *h* against which is screwed a ring carrying pins or screwed studs *j* serving as outer electrodes. This ring may be provided with a flange which is clamped between a shoulder on the casing and the inner end of the insulator.

119,161. Aeronautics. BATES, C., 73, Major Road, Stratford New Town, London.

PROPELLING.—A hood or casing adapted to be collapsed or to be extended to surround the propeller comprises a number of sections *d* sliding on rods *c* and actuated by means of connections d^1 leading to the pilot. In modifications, the casing may consist of telescoping tubes, or of annular bodies connected together by fabric.

STEERING.—The connections d^1 may be operated by means of the usual joy-stick.



NON-FERROUS METAL LICENCES.

The Committee appointed by the Board of Trade under the chairmanship of Sir Dudley Stewart-Smith, K.C., to consider applications for licences under the Non-Ferrous Metal Industry Act, 1918, have reported to the Board of Trade that the total number of applications received up to Oct. 4th was 1,575. The number of licences issued was 901.

A.B.C.

AERO ENGINES

Sole Proprietors:

WALTON MOTORS, LTD.

WALTON-ON-THAMES.

JOHN MARSTON

LTD.,

WOLVERHAMPTON.

Largest Makers of Aeroplane Radiators.

HIGHEST EFFICIENCY.

AIR BOARD STANDARD TUBE BLOCK.

COMMERCIAL AERONAUTICS

THE COMMERCIAL AEROPLANE AND HEAVY FREIGHT.

By "Medway."

Anything that is written by Mr. H. C. Bailey is always worth reading for its style and for the distinctive treatment by means of which he gives living interest to any subject upon which he touches. This is true even when he is not entirely a free agent, but must probably be taken to be expressing views held in certain official quarters.

His recent series of articles on the Air Force published in the "Daily Telegraph" give the impression of coming into the category of propaganda deliberately aiming at producing a certain influence upon public opinion. Consequently, when Mr. Bailey deals with the subject of the future of aircraft it is difficulty to tell how much he is expressing his own opinion and how much he is putting into readable form the opinion which others desire to express or desire the public to accept. The particular remark to which I am referring at the moment reads as follows:—

"For heavy freight the aeroplane is not yet and perhaps never will be of use."

If by "heavy" we mean freight measured in thousands of tons a day, then this statement is readily acceptable, but the context leads us to conclude rather that the term "heavy freight" is intended to apply pretty generally to all goods with the sole exception of mails.

For example, I assume that Mr. Bailey wishes us to understand that the aeroplane is never likely to be used for carrying, let us say, loads of three or four tons of raw material or manufactured products. If we are thinking only of this country or of the Continent of Europe, we can accept this theory easily. At the same time, I cannot feel that it is universally applicable.

Suppose, for example, that certain vegetable or mineral matter is obtainable from some remote district in Central Africa, and that this matter is found to be very valuable in the preparation of some important chemical or medicine or as a small fraction in the composition of some metal alloy of considerable merit. Now, it does not follow that the bulk quantity of the material to be dealt with would be very great. The transport from the source of supply of, say, a couple of tons two or three times a week might be sufficient to fill the world's demand.

In that case, the aeroplane would be the obvious conveyance, being not only the speediest but also the cheapest available means of transport. If, later on, new uses for this material were found, necessitating the production and transit of thousands of tons per day or week, then it might be worth while to construct railways or roads to deal with it.

The fact is, that every assertion to the effect that the aeroplane will never be a freight-carrying vehicle—excepting always mails and light parcels—should be qualified by a realisation of the moral certainty that many districts, the products of which are at present not utilised or are running to waste, will be developed through their early stages by means of aerial transport.

If we ignore this aspect of the matter, we are in my opinion ignoring one of the greatest benefits that the power of flight can confer upon humanity. That is to say, the new ability to open up sources of supply hitherto inaccessible and to give tangible value to land and labour in districts where at present neither possess any appreciable value at all.

During the war, we have witnessed much artificial prosperity and much real loss of the accumulated wealth of the world. To make good the deficit, we must open up new sources of wealth, and in this work the aeroplane will henceforth do for us what in the past has been done much more slowly and by means of much more expensive experiment, because of the first cost and time involved in the construction of road or railway. It should be noted that, in an instance of this sort, the aeroplane would be used not on account of its speed but solely on account of its almost complete independence of the character of the country above which it flies.

At the worst, the only initial expense involved would be the clearing of a certain number of landing-places and the provision of a small aerodrome suitably equipped with wireless apparatus so that, if any unit of the fleet had to descend in difficulties, communication could immediately be received at headquarters. In such a case it would matter little or not at all if, owing to gales or fogs, the service had to be suspended for a few days.

The journey would, therefore, be undertaken always under safe weather conditions and always at moderate speeds calculated solely to give the most economical safe transport. Certainly the machines used would in all probabilities be of very little value for military purposes, but the experience gained by their manufacturers would almost certainly be of great value in that connection, the big long distance bombing machines of the future being directly developed from the Colonial freight-carrying type.

A DREAMER OF DREAMS!

There are many forms of advertising, decent and indecent, expensive and free, serious and laughable. At one time or another there have been some noteworthy free advertisers connected with the motor industry.

In this particular direction, Mr. S. F. Edge was the wonder of all beholders. Seldom a week passed without Mr. Edge having one or two signed letters in the correspondence columns of the motor papers. When all else failed, he managed to work up a very plausible quarrel with somebody or other and, through it all, ran an admirable undercurrent of reference to the cars in the sale of which he was then interested.

The thing was scientifically done, and, moreover, it had the merit of a good deal of originality. Mr. Edge was not a mere copyist of other people's methods. The papers which inserted his letters knew quite well that he was using them as free advertising media, but there was always in every letter a bit of meat that made the whole thing worth printing.

In connection with the Aircraft Industry we are apparently witnessing the inception of a new system of free advertising. Mr. J. A. Whitehead's scheme is to come before the public in the white raiment of a prophet—usually of the obvious—and alternatively in the capacity of a feather-brained visionary. At present the scheme is going fairly well; quite well enough, in fact, to justify its continuance, provided that we accept the theory that any form of publicity is better than nothing. On this point Mr. Edge has often publicly stated that he would rather that somebody blackguarded him and his goods than that nobody mentioned them at all. However, Mr. Edge's method did not lay him personally open to any severe criticism of his mental capacity or stability.

Of course, some people may not mind what the world thinks of them personally, provided that it talks about their goods. Mr. Whitehead cannot be particularly thin-skinned on this point. He recently informed us that he was taking a "daring gaze" into the future.

The result of his surprising temerity was that he went so far as to hint (without in any way committing himself) at the possibility of the creation of flexible floating aero-stations on the Atlantic. He has not favoured us with an exact explanation of what he means by "flexible," neither, in fact, has he given any indication of the practical method of turning his vision into a reality.

Nevertheless, quite a lot of people mentioned in print that he had had this vision, or nightmare, or whatever he chooses to call it. Since then, he has been having some more, and altogether the constitution of war flour appears to be upsetting his digestion. Possibly, however, his internal economy is getting more used to it, since his latest vision, as reported in the "Evening News," is merely that of a globe encircled by a large number of lines along which aircraft continuously travel.

In other words, he sees some of the possibilities of commercial aeronautics, though why on earth the "Evening News" should take the trouble to inform its readers of his surprising foresight is past understanding. But if a London daily could find space in which to chronicle the dreams of individuals, with the war still in progress, there are evidently infinite possibilities of whole columns of free gush when there is more paper and less to put on it.

The only real trouble about this sort of thing is that it is rather apt to discredit the Industry and to make people think that the supporters of commercial aeronautics are mere visionaries with no practical basis behind the airy flights of their minds. It cannot really matter to the British people whether Mr. Redskin takes his courage in both hands and imagines the existence of a flying pig, or whether Mr. Blackleg breaks loose into a world of spirits (not the Scotch and controlled variety), and begins to wonder what would happen if cows had wings, an omission which, in the opinion of at least one observer, calls for heartfelt thanks to Almighty Providence.

Doubtless, we shall have some more weird visions thrown at us in the near future. In the meanwhile let us thank Heaven that the Aircraft Industry consists chiefly of people who are too level-headed to "see" things by night, or, if they overstep the bounds of moderation, will be at least sensible enough to refrain from communicating the results of their delirium to the Press next day.

Finally, if Mr. Whitehead wants to justify his flight of fancy, let him put the consequences of his hints and star-gazing into concrete form, so that sane men can have an opportunity of judging whether there is anything solid behind his free advertising scheme, or whether he is only, to put it mildly, talking through his hat.

P.S.—In the interim, an apology is due to everyone else inasmuch as these remarks may perhaps be calculated to help the circulation of the free advertisement that they attempt to deprecate. I can only say that on any future occasion when it seems necessary to return to the same subject, I shall take care to vary the name of the gentleman referred to above, sufficiently to obscure the reference, except to those who already know enough to make an indirect allusion comprehensible.

FLYING TO PARIS.

The "Times" is informed that, as soon as circumstances permit, Mr. Holt Thomas will institute an air passenger service between London and Paris. At the London end arrangements will be in the hands of Aircraft Transport and Travel (Limited), a company registered some years ago to deal with peace projects in the air. In Paris affairs will be managed by the Compagnie Générale Transaerienne, of which M. Henri Deutche de la Meurthe is president.

The departure from London will be from the Ritz Hotel, Piccadilly, and the arrival at the Ritz Hotel, Place Vendôme, Paris. It is impossible at this stage to give complete details of the service, but it will probably be as follows:—

Departure by motor-car, Ritz Hotel, London	10.0 a.m.
Departure from Aerodrome, London	10.30
Arrival Aerodrome, Paris	1.0
Arrival Ritz Hotel, Paris	1.30

The service will at first, until new designs are produced, be conducted with fast machines which have been used for conveying large cargoes of bombs over German territory. These machines, now being produced in large quantities, are fitted with two high-powered engines, so that if one engine fails the other will carry the machine to its destination.

It is now permitted to give details of the machines. According to official statistics they travel 128 miles an hour, carrying 3,250 lbs. weight. They climb 5,000 ft. in five minutes, and "loop the loop." This fact is not relevant to passenger-carrying, but is evidence of flying capabilities. The late Captain Hucks, Chief Pilot to the Aircraft Manufacturing Company (Limited), besides being the first pilot to "loop the loop" in this country, also was the first pilot to "loop" a large two-engine machine of this description.

Tickets will be available immediately at the Ritz Hotel, London. Passengers will be carried in rotation according to the numbered ticket purchased. The price of the voyage will be 15 guineas per passenger. The service will be daily, weather permitting.

The Aircraft Manufacturing Company (Limited) has supplied the designs for a large part of British production during the war, and for the majority of the service machines for the United States. The same machines will be used until the company, hitherto solely engaged on war work, can supply machines specially designed for passenger service.

FLYING THE ATLANTIC.

The "Times" correspondent writes from New York on Nov. 12th:—

According to an announcement made by the Aero Club of America, it is planned, now that the Armistice is signed, to resume activity on the proposed transatlantic aircraft competition. Signor Caproni will submit plans for a 1,800 h.p. air cruiser to cross the ocean with several passengers. He has already entered a 5,000 h.p. aeroplane, and the Handley Page interests will also enter a machine of the same power.

Mr. Henry N. Atwood, representing a group of capitalists, has offered to have aeroplanes built to make the flight in the name of the Aero Club.

"OUR VERY OWN AERIAL POST."

According to the "Daily Chronicle," of Nov. 13th, the Postmaster-General (Mr. Illingworth) is developing a scheme for the delivery and dispatch of letters between London, Dublin, and Edinburgh by aeroplane.

[Who said that England never awakens?—Ed.]

AN IRISH AERIAL MAIL.

From the "Daily Chronicle" of Nov. 11th:—

Among the suggestions contained in the first report of the Select Committee on Transport, which deals solely with Ireland, is the establishment of a port in the North "from which improved fast train services for passengers and air services for express mails might be found feasible," and a tunnel or train ferries between Great Britain and Ireland, and a transatlantic terminal port.

The Committee is impressed by the immense potential advantages for the development of inland transport in Ireland, due to the country being endowed with many magnificent natural harbours and great natural and artificial interior waterways. Several recommendations are made by which these advantages may be utilised. A Government Harbour Department is suggested as a beginning.

WAIT AND SEE—AS USUAL.

Practically all the nations engaged in this war are now preparing for the commercial war after peace is declared by instituting aerial-mail systems. It must be quite evident to any sane-thinking person that aircraft will play a large part in the so styled "war-after-the-war."

British politicians have spoken eloquently on the great possibilities of British commercial supremacy after the cessation of hostilities, but they seem to have taken no steps whatever to ensure this by starting on the practical part now. The "wait and see" policy appears still to be in evidence amongst the majority of British politicians, who, in spite of much agitation, cannot or will not realise the usefulness of aircraft for peace-time purposes.

One quite realises that it is customary for Britain never to be the first to start on a new venture, but as so many countries—Allied, enemy, and neutral—have now been experimenting with aerial-mail systems for several months, we shall not lose our reputation by starting an aerial post immediately.

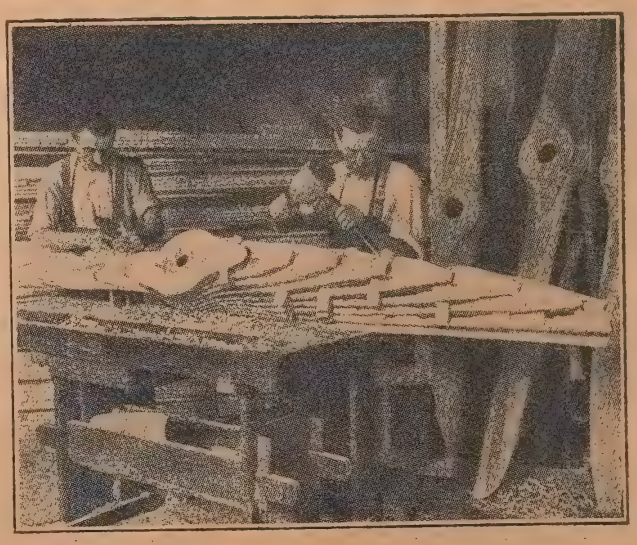
Many arguments are put forward against an aerial-mail system, one of which is that England is so small that the saving of time by sending mails by aircraft as against the present system would be so little as not to be worth while. Therefore, it is argued, as the current system of despatching mails is practically perfect, the institution of an aerial-mail is needless. Even taking this argument to be correct, the drawback can be obviated by establishing an aerial-mail route between London and Paris.

The distance between London and Paris, as the crow flies, is practically 300 miles, which at the very highest estimate would not take an aeroplane more than 3 hours to cover. For a start, two machines could be used, each making one journey one way each day. One feels certain that the French authorities would willingly allow British aviators, carrying mails to France, the use of aerodromes near Paris.

It might be argued, as regards this proposition, that England cannot spare the aeroplanes, fuel and personnel, but when one considers the number of pilots in the advanced stage of instruction who are always making long-distance flights in England, this argument would be entirely dispelled. Even if these men were not utilised, there are many aviators who are unfit for fighting, but are still competent pilots, and their services could be acquired.

Each machine would be capable of carrying 200 lbs. of mail, and between two such important centres as London and Paris one does not foresee much difficulty arising out of not having enough letters to carry. The business fraternity would certainly make full use of an opportunity enabling them to send a letter to Paris and receive a reply the same day, or even the next day—allowing for censoring.

The British people expect the Government to do all that is possible to further the interests of British Commerce, and will certainly not wish to be behind other nations after the declaration of peace.—R. M.



PRIMITIVE METHODS.—German Airscrew Makers at Work.

CANNONS' (LINCOLN) AEROPLANE GLUES

"IL PROPELLER" (Cake Glue)
FOR PROPELLERS.

"AERIAL" (Cake Glue)
FOR CLASS 1 WORK (NOT PROPELLERS).

"BI" (Cake Glue)
FOR CLASS 2 WORK.

CANNONS' LINCOLN LIQUID GLUE
FOR CLASS 1 WORK.
PACKED IN 7, 14 and 28 lb. TINS.

SOLE MANUFACTURERS:

B. CANNON & CO., LTD., LINCOLN.



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Telephone – WILLESDEN 2490 (10 LINES) | Telegrams – BERWORKS HARLES, LONDON

PROPRIETORS and MANUFACTURERS of the

SIZAIRE-BERWICK CAR

THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS SBAC

NAPIER

AERO ENGINES AND AIRCRAFT.

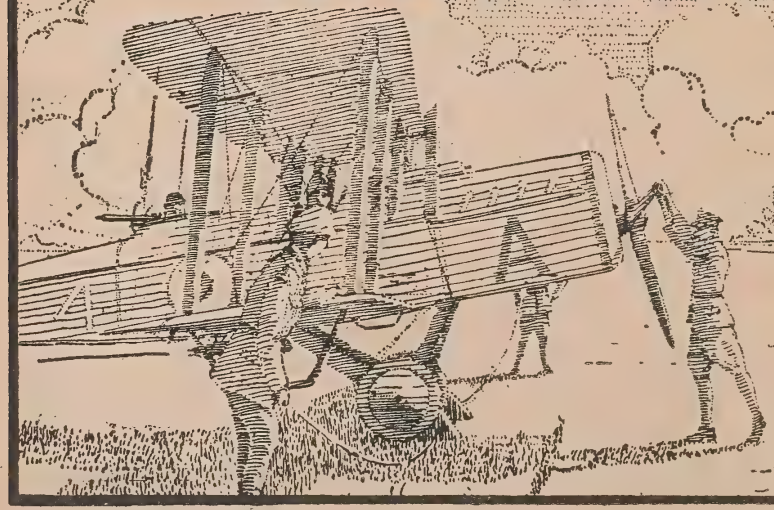
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Telephone—
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Nov. 14th.

A GENERAL REVIEW OF THE PRESENT POSITION.

The cessation of hostilities and the future prospects of the markets are being very freely discussed at present. There will, of course, be an immediate drastic reduction in the demand for munitions, including aircraft. In fact, the state of the markets indicates that buyers are marking time pending further developments.

There will be a huge demand for supplies for domestic purposes. It is, however, practically certain that the demands from various trades will be dealt with in priority order, the appointment of a Standing Council having been made to deal with post-war priority matters. This Council has already considered statistics showing our stocks of the most important raw materials, and it is understood that where the stocks justify the cancellation of any form of control over such materials this will be done at the earliest possible moment.

This would indicate that at some future date raw materials will be entirely released from the various Controllers. It may be six or twelve months before the last of the iron hands has released its grip. At the same time there is the prospect of some materials being released immediately.

It is essential that the Ministry should immediately issue full particulars of the policy it proposes to pursue with regard to raw materials, including the order of priority in which the various trades will be placed. Manufacturers will then be in a position to intelligently lay plans for changing over without delay to a peace-time programme.

The Aircraft Industry, in particular, will be anxious to learn what programme the Government has arranged and the order of priority in which they are to receive supplies of raw materials.

The question of prices of Aircraft materials is discussed under the usual headings.

COPPER.—The production of Copper up to the end of last week was not very favourable compared with the war demand. It is, however, estimated that there will now be a reduction in consumption for war purposes of 80 per cent. to 95 per cent. If this takes place immediately there will be a large accumulation of stocks and prices will certainly gradually decline, although some producers are stated to have said that there is not much possibility of this taking place owing to the huge demands which will be made for domestic requirements.

Official Price, £122 10 0

TIN.—The market is now very dull indeed, and recent events have made both buyers and sellers cautious, although the latter are apparently expecting a gradual decline in prices, and would like to dispose of any stocks they hold.

The price dropped £4 on Nov. 11th, and the reduction in shipping insurance rates is bound to cause a further reduction. It is, in fact, generally agreed that prices will continue to decline during the next few months.

Comparative Prices.

To-day, Nov. 12th ..... £320 10 0 per ton.
Last week ..... £324 10 0 per ton.

LEAD.—Supplies were being maintained for munition purposes, and although the system of control may not yet be relaxed owing to the shortage of Lead, it is now certain that there will be supplies available for domestic requirements.

Official prices remain unchanged.

STEEL.—There is every possibility of the demand for Steel being as large during the next twelve months as it has been in the past.

The demand for Aircraft Steels will undoubtedly be considerably reduced; it is not, however, certain whether this will affect the controlled prices. Producers are already soliciting orders for various classes of Steels. In fact, there has been keen competition recently for orders for Tool Steels. Official prices remain unaltered, and it is not expected that there will be any appreciable reduction at present.

TIMBER.—This market will be entirely governed by the Government's Aircraft programme so far as supplies are concerned. The trade is anxious to know when the hand of the Controller will be relaxed. Probably some statement will be made during the next few days. If some of the factories now engaged on Aircraft work wish to change over immediately to their peace trade the regulations governing Timber supplies should be immediately relaxed to enable such firms to obtain supplies, and unnecessary unemployment will be avoided.

All kinds of Timber will be in great demand, supplies for ordinary domestic requirements having been entirely cut off for the past two or three years.

There should be a gradual decline in the prices of imported woods owing to the decline in rates for shipping insurance, and it is expected that there will be an immediate easing off.

FABRIC.—It is difficult to see what the effects will be on this market so far as price is concerned. It was expected that an advance would have been made this month, but this is hardly likely now.

In the first place the demand will be considerably reduced, and, secondly, it will probably be possible to obtain supplies of flax from Russia.

It is expected that the stocks held at present will more than cover the demand for Aeroplane work during the next few months.

THE ASSESSMENT OF ENGINEERING FIRMS.

A case of importance to the occupiers of manufacturing premises containing machinery was decided on Nov. 6th in the Court of Quarter Sessions for the County of Middlesex, after a hearing extending over two days.

The appellants were S. Smith and Sons (Motor Accessories), Ltd., the well-known makers of motor and aircraft accessories, who were appealing against the assessment to the Poor Rate of their works at Cricklewood, and the respondents were the Assessment Committee of the Parish of Willesden.

The appeal was in respect of a rate made in April, 1917, and chargeable in two instalments, the assessments being for the first instalment: gross estimated rental £3,645, rateable value £2,430; and for the second instalment: gross estimated rental £4,720, rateable value £3,147. Each of these assessments was objected to on the ground that in arriving at the assessment the machinery upon the premises had been rated, and that the assessments were thereby excessive and not in accordance with the legal decisions on this question.

The valuers for the Assessment Committee claimed that by the decision of the House of Lords in the case of Kirby v. Hunslet (1905) they were entitled to value the engineering machinery as if it were rateable.

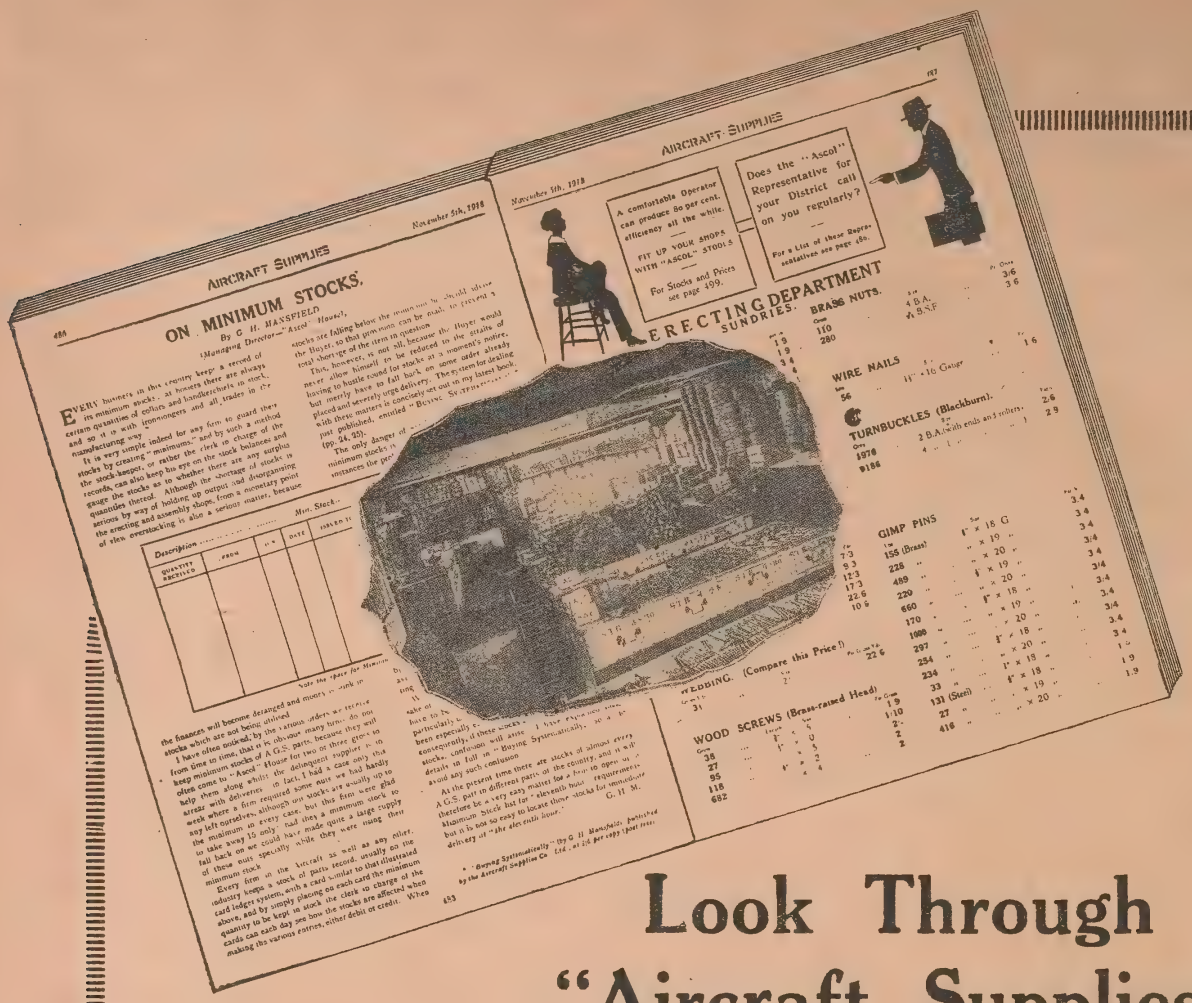
The Court decided against the Assessment Committee and reduced the rateable value for the first instalment of the rate from £2,430 to £1,437, and for the second instalment from £3,147 to £1,915.

The rating surveyors engaged as witnesses for the appellants were Mr. H. E. Elkins (Humphreys-Davies and Co.), 5, Laurence Pountney Lane, London, and Mr. H. H. Fuller, 15, Serjeants' Inn, London; and for the respondents, Mr. A. L. Ryde, of Messrs. Ryde and Sons, 49 and 50, Parliament Street, Westminster, and Mr. P. Ryan, of 1, Albemarle Street, W.

Counsel engaged in the case were Mr. E. Page, K.C., and Mr. R. W. Turner for the appellants, instructed by Messrs. Clifford, Turner, and Hopton; and Mr. W. C. Ryde, K.C., and Mr. H. J. Turrel for the Assessment Committee

SECOND-HAND MACHINE TOOLS, WOOD-WORKING MACHINERY AND TREADLE LATHES.

The Minister of Munitions announced on Nov. 13th that in future second-hand machine tools, second-hand wood-working machinery, and second-hand treadle lathes may be bought and sold without the sanction of the Ministry, and without restriction as regards price. This suspension of regulations, however, does not in any way affect the position with regard to new tools, to which the regulations still apply in their entirety. A further notification concerning new tools will be issued in the course of the next few days.



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BECAUSE you are sure to find that 90% of the items you are urgently requiring are in stock at "Ascol House" and ready for immediate despatch. A spare few minutes each day with "Aircraft Supplies" will save you heaps of time and tronble in making fruitless enquiries from manufacturers already full up.

IN addition to a complete list of the 5,000,000 parts lying in the "Ascol" Stores, "Aircraft Supplies" contains various articles of interest to Aircraft Manufacturers, an Enquiry Bureau, articles by the Sales Manager and the Managing Director at "Ascol" House, details of "Ascol" Specialities, etc., etc.

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G. H. MANSFIELD, MANAGING DIRECTOR.

TRADE MARK ASCOL REGISTERED

AIRCRAFT FINANCE

CURRENT TOPICS.

TRANSITION PERIOD FINANCING.

The transition period is likely to produce many tough problems, included amongst them being some of a financial nature. Inability to produce even a moderate quantity of capital sometimes spells the difference between success and failure, and it is up to the Government to formulate and elaborate a scheme to meet any possible requirements in this connection.

Politicians of various hues have spoken glibly at times of the moral and material support which would be accorded for the purpose of enabling the industrial machine to work normally again. Somehow, these utterances appeared vague and indefinite.

JUDICIOUS ASSISTANCE.

No one in his senses could ask for or expect an indefinite period of unlimited official protection. That is the crude species of Socialism. Having been "spoon-fed" by the Government "for the period of the war and a little longer," most people would prefer to be free and independent once more, and the ability to attain the desired goal may in the case of some special industries—those with youth and a record of success to their credit, for example—depend upon judicious help, moral as well as financial. Having thus reached a degree of independence, and, of course, efficiency, they would be able to consolidate their position.

SHARE MARKET DROOPING.

Aircraft and kindred shares have been in a state of uncertainty with values sliding away to a trifling extent, but there has not been any outstanding weakness. The inability to arrive at any definite conclusion as to the real position during the transition period: the vague suspicion that the Peace conclave may be protracted and thus productive of unsettlement explains why prices recede when they move at all.

AIRCRAFT NOTES AT A PREMIUM.

It is worth noting that the Seven per Cent. Short Term Notes of the Aircraft Manufacturing Co. now command a small premium. This will please those people who successufily subscribed for the notes.

VALUATION OF HUMBERS.

The Humber Co. is paying a 6 per cent. dividend on its ordinary shares. This is the first since the formation of the present company, and was foreshadowed herein some time ago. The price of the shares is 19s., which appears to be a rather generous valuation for the security of a concern with such a poor dividend record. One will be able to judge better the investment merits of the shares when the report is available. The Dennis Co. is increasing the bonus on the ordinary shares this year to 2s. from 1s. 6d.

CELLULOSES PLANCHON.

The Celluloses Planchon Co. reveals a profit for the past financial year of 475,053 francs in comparison with 600,122 francs for 1916-7. It is stated that the contracts with the French Government involved the total productive capacity of the concern. At times there was a shortage of raw materials, necessitating a curtailed output, and, to this cause is attributed the smaller profit. The contract with the Government for the production of nitrocellulose is now being terminated, and the company will revert to the output of photographic requisites, the Government furnishing the primary material and the necessary labour.

NEW HUDSON'S CAPITAL.

One can understand why the New Hudson Cycle Co. intends to change its name to New Hudson, Ltd.; its business has changed of recent years. It is also proposed to double the authorised capital to £250,000, evidently for the purpose of being prepared for possibilities that may arise. The additional capital of £125,000 will be issued when needed. In these times it is just as well to be prepared for anything, and it is likely the necessary securities will be given by the shareholders.

COMPARISON OF THE RESULTS.

The year's trading profit reached £54,610, against £32,493. On this occasion the excess profit duty had to be provided in addition to the special taxation, so that the disposable total, inclusive of the surplus, brought in is only £42,500 instead of £60,300. However, in addition to placing £15,000 to reserve bonuses are resumed, 7½ per cent. being paid on top of the 10 per cent. dividend. Only £9,300, compared with £49,300 remains to be carried forward.

SUBSTANTIAL RUDGE BONUS.

Rudge-Whitworth provides a pleasant surprise by distributing 20 per cent., free of income tax, in comparison with only 10 per cent. for several preceding years. The dividend record of the company has been one of considerable irregularity, which detracts from the merits of the shares as an investment. Indeed, it is questionable whether they are not generously valued at the current quotation.

VAUXHALL'S PROPOSALS.

The capitalisation of the Vauxhall Motors is out of proportion to the growth of the business, which is stated to have extended substantially. Therefore it is proposed to increase the capital to £400,000 by the issue of 100,000 £1 ordinary shares. It is hoped that these will be offered to existing shareholders at a price entailing a bonus.

INTERESTS IN RUSSIA.

The company presents its reports for the past two years, and in doing so states that the Russian accounts not being complete the figures relating to that particular section of the business are subject to that reservation. Such action is to be commended in the exceptional circumstances, the assets in Russia being written down to what is considered a reasonable value.

A SOUND POLICY.

There is no telling what will happen in that country, and prudence actuates the free use of the pruning knife in respect of such assets. Should events prove that the depreciation allowed was over generous the company will be none the worse for such liberality. On the contrary, it may prove a source of strength. In times like these, with taxation heavy and contingencies serious and numerous, it is sound policy to write down valuations.

NEW COMPANIES.

GERRARD ENGINEERING WORKS, LTD.—Private company. Registered Nov. 8th. Capital, £5,000 in £1 shares. To take over the business of manufacturers of component parts or (? of) aeroplanes, motor and mechanically propelled vehicles carried on by H. Hurlin and W. Ingram as the "Hurlingham Aircraft Co." Agreement with (a) H. Hurlin and W. Ingram and (b) Gerrard and Co., Ltd. The subscribers (each with one share) are:—H. Hurlin, 185, Church Street, N. (16), engineer; E. E. Glover, 8, Cowcross Street, E.C., spice merchant. First directors:—H. Hurlin and W. Ingram (both permanent), E. E. Glover and N. D. E. Robertson-Gerrard and Co., Ltd., have the right to two representatives on the board. Registered office:—15-19, Great Tichfield Street, W.

FLYING TRANSPORT, LTD. — Private company. Registered Nov. 12th. Capital £10,000 in £1 shares. To carry on the business of carriers and transporters of goods, merchandise and passengers by aeroplanes, airships, etc. The subscribers (each with one share) are:—G. Richardson, 8, Priory Avenue, Prittlewell, Southend-on-Sea, solicitor's clerk; Elsie G. Perry, 73, Wilberforce Road, Finsbury Park, N.4, solicitor's clerk. The directors are to be appointed by the subscribers. Registered office:—67, Watling Street, E.C.

SATISFACTIONS, MORTGAGES, AND CHARGES

AERO MECHANICAL CO., LTD.—Charge on proceeds of munitions order, dated Nov. 1st, 1918, to secure all moneys (not exceeding £5,000) to become due from company to National Provincial and Union Bank of England.

AIR RAID INSURANCE.

As inquiries are being made, the Board of Trade give notice that all aircraft and bombardment insurance policies under the Government Scheme which now fall due will be regarded as being renewed without payment of premium.

BOLSHEVIK FINANCE.

A message from Paris, dated Nov. 18th, states that during the past few days the soviet which was organised in Strasburg has been selling German war material at whatever price it would fetch.

Purchasers obtained rifles for 10d. each, machine-guns at 4s., and an aeroplane was bought for £5. A Zeppelin was offered for £12, but no buyer could be found.

[This is an example of what is entailed by a League of Nations and Universal Disarmament. After which comes the irruption of the Barbarian—always from the East.—Ed.]

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No. 3.

January 6th, 1917.

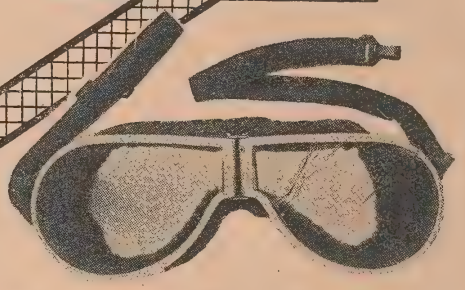
Dear Sirs,

Please find enclosed one pair of Triplex Goggles, which were broken yesterday when I had the misfortune of crashing a fast experimental machine.

You will be pleased to hear that Triplex saved my eyes from being badly cut, and will also be interested to learn that the Triplex windscreen was unbroken, though the immediate surroundings were battered.

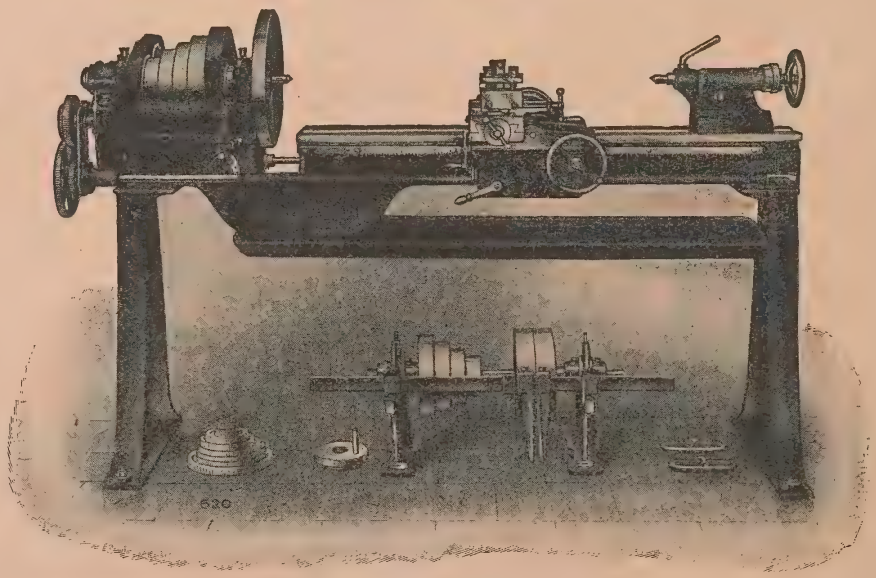
Faithfully yours,
Signed . . . . .

Actual Photograph below.



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5 in. Centre SS & SC Lathe.

We can also supply this 5 in. Lathe with Treadle motion or with Combined Motor and Treadle drives.
FULL PARTICULARS UPON APPLICATION.

(Continued from page .)

The following are granted temp. commns. as Sec. Lts.:—H. B. Hinde, July 1st; R. E. Cunningham, Sept. 6th; E. R. Webb, Oct. 26th; L. J. Slack, Oct. 29th; J. Mutimer, R. Twitchell (P.F.O., late R.N.A.S.), J. O. Minshall (Hon. Sec. Lt., ret pay), C. R. Brown (Sec. Lt., ret. List, T.F.), Nov. 8th; E. Albert, H. T. Backhouse, J. T. Brown, H. B. Chorley, F. W. Crawford, A. P. Dodd, F. Fogg, B. M. Hastings, A. Higham, W. S. B Northover, G. H. Nutter, E. S. Ripley, F. G. Robinson, T. W. Vanderpump, W. D. Barnett (late Sec. Lt., K.O. Yorks L.I.), H. E. Goddard (Capt., ret. List, T.F.), and to be Hon. Capt., H. O. Newland (late Lt., Gen. List), and to be Hon. Lt., E. N. Paterson (Lt., ret. List, T.F.), and to be Hon. Lt., A. N. Wyatt (Hon. Capt., ret. List), and to be Hon. Capt., Nov. 11th.

J. Van N. Reynecke, Sec. Lt. (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., Oct. 9th.

The following relinquish their commns. on ceasing to be empld.:—Lt. A. V. Paris (Lt., City of Lond. Yeo.), Oct. 15th; Lt. T. F. Cunningham, Oct. 17th; Sec. Lt. R. P. Nethercot, M.C. (Lt. W. York R.), Oct. 31st.

Lt.-Col. H. H. Southey relinquishes his commn. at his own request, Nov. 13th.

Lt. H. Ravenhill relinquishes his commn. on acct. of ill-health, and is granted the hon. rank of Lt., Nov. 13th.

The following Sec. Lts. relinquish their commns. on acct. of ill-health, and are granted the hon. rank of Sec. Lt.:—J. C. Child, W. Hall, Nov. 13th

The following Sec. Lts. resign their commns.:—R. J. Barnes, Aug. 26th; T. C. L. Etherington, Nov. 13th.

The date of appt. of Lt. S. Currington is July 10th, and not as stated in "Gazette," Sept. 17th.

The initials of Lt. Sir H. W. A. Ripley, Bt., are now as described, and not in "Gazette," Oct. 11th.

TECHNICAL BRANCH.—Capt. (actg. Maj.) N. B. Tomlinson retains his actg. rank whilst empld. as Maj., from (S.O.), Oct. 9th.

Capt. J. K. Mountain to be actg. Maj. whilst empld. as Maj., from (S.O.), Nov. 4th.

Sec. Lts. to be actg. Capts. whilst empld. as Capts.:—Actg. Lt. D. H. Moore, Sept. 21st; (Hon. Lt.) E. G. Herbert, Nov. 1st.

W. G. Aston (Capt., A.S.C.) is granted a temp. commn. as Capt., Sept. 20th.

Lts. to be actg. Capts. whilst empld. as Capts.:—L. S. Newns, July 2nd; H. C. Peirce, from (Ad.), Oct. 15th.

Sec. Lt. G. Lacey to be actg. Capt. whilst empld. as Capt., Oct. 4th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts.:—(Hon. Lt.) C. H. Higson, R. Hall, (Hon. Capt.) J. G. Russell, from (Ad.), A. Spring, (Hon. Lt.) E. Tanner, A. J. Williamson, Oct. 1st; D. R. Morford, Nov. 2nd.

H. P. Northcote, Lt. (W. York R., Spec. Res.) is granted a temp. commn. as Lt., Aug. 24th. (Substituted for notification in "Gazette," Oct 15th.

W. E. Baker (Qr.-Mr. and Maj., ret. pay) is granted a temp. commn. as Lt., and to be Hon. Maj., Oct. 25th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—H. Marsden, Sept. 19th; P. S. Beaufort, Oct. 10th.

Sec. Lts. (Admin.) to be Sec. Lts.:—R. T. Smith, June 5th; D. C. Manuel, June 10th; A. H. Durand, Aug. 7th; H. N. Hasler, Sept. 23rd; P. C. Barratt, G. Hill, Oct. 5th; D. Lidderdale, Oct. 10th; R. B. Cherry, Oct 12th; C. S. Hill, Oct. 13th; T. R. Davies, Oct. 16th; H. D. Diggle, Oct. 21st.

The following are granted temp. commns. as Sec. Lts.:—L. Marsh (temp. Lt., attd. Lan. Fus.) to be Hon Lt., Sept. 13th; J. K. Shrimpton (Sec. Lt., R.G.A., Spec. Res.), Oct. 12th; A. M. Godfrey, B. O. Nash, H. A. Welch, Nov. 11th.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. (Hon. Lt.) F. D Sutherland (Lt., Can. M.G.C.), July 4th; Capt. H. I. MacIver (Lt., R.N.V.R.), Aug. 23rd; Sec. Lt. F. P. D. Scott, Sept. 10th; Sec. Lt. (Hon. Capt.) J. Barnes (temp. Capt., Notts and Derby R.), Oct. 17th; Sec. Lt. (Hon. Lt.) W. L. Lancaster (Lt., E. Surr. R.), Oct. 19th; Capt. W. T. Webley (Lt., R.N.), Oct. 28th.

The surname of Sec Lt. E. G. Davison is as now described, and not as in "Gazette," Oct. 22nd.

The notification in "Gazette," July 23rd, concerning Sec. Lt. R. T. Smith is cancelled.

The notifications in "Gazette," Oct 8th and 15th, concerning Lt. L. Marsh are cancelled.

MEDICAL BRANCH.—W. C. A. Ovey is granted a temp. commn. as Lt., Nov. 10th.

DENTAL BRANCH:—The following are granted temp. commns. as Lts.:—W. J. Singleton, J. Smith, Nov. 11th.

MEMORANDA.—Lt.-Col. C. G. Hoare, C.M.G., to be actg. Brig.-Gen. while specially empld., April 1st.

C. C. Marindin, D.S.O. (Bt. Lt.-Col., R.A.), is granted a temp. commn. as Lt.-Col., Oct. 28th; sen. April 1st, and prec. next below L. F. Blandy, D.S.O.

Maj. E. A. Ewart, O.B.E., to be actg. Lt.-Col. while specially empld., Nov. 12th.

Capt. (actg. Maj.) E. W. Simpson to take sen. from April 1st; with prec. next below Capt. W. V. Sherwell.

Lt. E. Edwards to be temp. Capt. (with pay and allces. as a Lt.) while specially empld., Aug. 22nd.

The following are granted the hon. rank of Capt., and to retain their actg. rank:—Lt. (actg. Capt.) W. H. Ellison, Sec. Lt. (Hon. Lt.) (actg. Maj.) C. Harvey.

Lt.-Col. (actg. Col.) I. M. Bonham-Carter relinquishes the actg. rank of Col., April 1st.

Lt.-Col. G. L. Crossman, C.M.G., D.S.O. (Bt. Lt.-Col., W. Yorks R.), relinquishes his commn. on ceasing to be empld., April 12th.

Sec. Lt. A. C. Davern to take rank and prec. in the Air Force as if his appt. as Sec. Lt. bore date Oct. 4th.

AIR MINISTRY, Nov. 15th.

R.A.F.—The following temp. appt. is made at the Air Ministry:—Staff Officer, 3rd Cl.—Capt. E. J. Cuckney, D.S.O., Oct. 27th.

The following temp. appt. is made:—Staff Officer, 3rd Cl.—Graded for purposes of pay at Air Ministry rates.—Capt. R. E. Ollerenshaw, Oct. 23rd.

The following temp. appts. are made:—Staff Officers, 1st Cl.—(Air.) Maj. V. Gaskell-Blackburn, D.S.C., and to be actg. Lt.-Col. whilst so empld., Oct. 19th; Lt.-Col. H. Campbell, D.S.O., Oct. 31st.

Staff Officers, 2nd Cl.—And to be actg. Majs. while so empld. (P.).—Lt. (actg. Capt.) C. C. Hansford, July 22nd; Lt. (actg. Capt.) G. H. A. Hawkins, Aug. 19th; Capt. E. St. C. Harnett, vice Capt. (actg. Maj.) B. W. Bentinck, who relinquishes the actg. rank of Maj., Nov. 2nd.

Staff Officer, 4th Cl. (1st Gr.).—Capt. E. O'D. Crean, Oct. 21st.

Staff Officers, 4th Cl. (2nd Gr.).—Capt. P. White, Sept. 26th; Lt. T. N. Jennings, Lt. C. J. Reynolds, vice Capt. G. B. Anderson, Nov. 6th.

FLYING BRANCH.—Capt. S. H. Long, D.S.O., M.C., to be actg. Maj. while empld. as Maj. (A.), Sept. 15th.

Lts. to be actg. Capts. while empld. as Capts. (A.):—J. E. Wood, Oct 15th; E. T. Lough, Oct, 21st; D. Carruthers, Oct. 22nd; D. J. Waterous, D.F.C., Oct. 24th; E. L. Ives, Oct. 30th; E. J. Jacque, Oct. 31st; C. W. D. Bell, M. Stuart-Menteith, M.C., Nov 1st; J. H. McNeaney, Nov. 8th.

Sec. Lt. H. G. Clappison to be actg. Capt. while empld. as Capt. (A.), Oct. 14th.

Sec. Lt. J. L. Brown to be actg. Capt. while empld. as Capt. (O.), Oct. 28th.

Capt. C. R. de T. Drummond to be Lt. (A.) from (T.), July 9th.

Lt. Hon. A. J. W. Keppel to be Lt. (A.) from (Tech.), Oct. 24th.

Sec. Lt. H. A. Ball, M.M., to be actg. Lt. (K.B.) while empld. as Balloon Comdr., Nov. 9th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.):—A. Smethurst, Oct. 21st; H. C. Killen, M. Dean, L. S. H. Bartlett, G. R. Butcher, Oct. 23rd; E. A. C. Watts, W. D. Durran, A. R. Ellwood, C. V. Forsyth, R. Y. Eccles, Oct. 24th; H. Blatcher, C. S. Lammiman, Oct. 25th; G. R. Mason, W. J. Chenery, J. A. Humphrey, L. G. Destrube, H. E. Higginson, Oct. 26th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—A. E. V. Bruce, Oct. 22nd; A. H. Wilson, Oct. 23rd; F. S. Adams, R. Johnston, Oct. 24th

The following are granted temp. commns. as Sec. Lts. (A.):—H. H. Crofts (Sec. Lt., York. L.I., T.F.), J. C. Fitzmaurice (Lt., K. Lpool. R., T.F.), and to be Hon. Lt., Oct. 22nd; R. E. Quesnel (temp. Sec. Lt., N. Lan. R.), G. F. Watson (Sec. Lt., R. Fus.), W. Reid (Lt., R.F.A., Spec. Res.), and to be Hon. Lt., Oct. 23rd; H. W. Pearson (Lt., M.G.C., C.E.F.), and to be Hon. Lt., Oct. 24th; J. C. Campbell (Sec. Lt., W. York. R., T.F.), Oct. 26th.

The following are granted temp. commns. as Sec. Lts. (A.):—N. P. Aldred, R. F. Angus, P. C. Armstrong, H. N. Baker, D. C. Brown, D. H. Brown, A. I. Boyer, F. M. Buchanan, C. A. Campbell, W. H. Carey, J. Carlisle, C. C. Chapman, O. H. Clearwater, W. L. Collins, K. C. R. Coulter, D. M. Cowan, M. C. Dawson, C. J. de Laplante, A. A. Dumouchel, J. Elliott, G. M. Fanelli, J. A. O. Fenton, E. L. Goold, G. M. Hallatt, E. M. Harris, F. W. Haserick, W. McK. Howell, R. E. Jellison, F. Kirby, M. K. Knudtson, H. A. Lambert, G. Lamont, W. L. Lidster, A. D. Lockhart, A. W. Martin, H. V. Morehouse, W. G. Macfarlane, M. McIsaac, P. W. McNaughton, H. E. Nash, E. C. Nickerson, V. O'Neill, H. T. Parsons, G. C. Phillips, G. E. A. Rice, H. E. Roenisch, F. Roy, L. E. Snowden, C. E. Stewart, J. F. Stone, C. Stuart, S. J. Stuart, T. Swan, A. L. Veale, N. A. Walker, H. C. Weese, A. V. F. Weir, T. H. Welsh, H. E. Wilson, A. V. Bonner, E. Laver, B. V. Nash, Oct. 3rd.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—273 W. H. Truesdale, July 7th; 530616 W. P. Smith, July 12th; 127731 E. R. Dixon, July 14th; 206244 J. M. Adams, July 18th; 0834 N. Pettitt, 105382 G. G. Foolkes, July 24th; 56174 H. J. Crisp, July 25th; TR5/132335 H. M. Thompson, July 27th; 434840 E. G. Welsby, 90840 H. S. Spencer, July 29th; 115092 R. F. Wayman, Aug 1st; 293435 F. C. Williams, 491210 W. Greenwood, Aug. 3rd; 20852 F. G. Watson, Aug. 4th; 50737 M. A. Price, Aug. 5th; 320019 E. G. Hughes, Aug. 6th; 630842 H. J. Mitchell, Aug. 7th; 64257 R. S. Davey, 40490 G. W. Butcher, P/18334 A. C. Harper, 295145 F. W. Hill, Aug. 8th; 208767 C. L. Henn, 290502 E. N. Fletcher, 345191 C. H. Whittingham, 93566 J. L. Wilcock, CM240 R. T. Scott, Aug. 9th; 320917 G. L. Sutton, 96257 L. T. Carruthers, 230432 W. L. Arnold, 482062 W. D Edwards, 40136 C. W. Jones, M2/152747 B. J. Hill, Aug. 10th; 270077 S. A. C. Newnham, M2/150359 C. McC. Vincent, 101157 C. E. Woodger, Aug. 11th; M1/08470 W. Day, Aug. 12th; 280109 W. Hunt, 50795 C. F. Butler, 40403 P. P. W. Whelan, 70059 F. W. Boswell, 4/51268 E. L. Rees, Aug. 14th; S/1658 W. J. Davis, Aug. 16th, 31830 E. A. C. Gillies, Aug. 17th, 59411 W. H. Drew, Aug. 18th; 40200 V. H. N. Le Vayasseur Noel, 23990 E. R. Davis, 95935 F. H. Cowley, Aug. 19th; 624082 F. J. Jackson, Aug 20th; 200732 H. Bagshawe, Aug. 22nd; 209070 E. H. Rossington, Aug. 23rd; 602031 J. Paterson, Aug. 26th; 110252 J. J. Fisher, Aug. 27th; M2/101162 A. J. Brewin, 74712 E. J. N. Finlayson, 50821 P. W. Ross, Aug. 28th; 839 R. C. Stout, Sept. 1st; 4014 H. V. Perrin, Sept. 3rd; 237841 G. F. Sharman, Oct. 8th; 11042 A. W. Ansell, 100449 A. C. Brown, Oct. 20th; 137439 A. E. J Pratt, Oct. 23rd; 554894 A. J. C. Overal, Oct. 25th; 110479 C. R. L. Shaw, 100465 H. C. Sparks, 117171 T. H. A. Christie, 1700 T. P. O'Donnell, 316038 W. R. Mawhinney, 320952 W. P. Lewis 10056 S. R. Packer, 330136 J. R. Glover, 522097 B. H. Windsor, 766 W. K. Cole, 100678 H. M. Feltham, 100238 B. W. H. Arnold, 535435 W. T. Ferguson, 778933 F. E. Collins, 32574 J. L. Custard, 3774 H. E. Cutler, Oct. 30th; 38105 W. L. Webb, 100409 H. A. Sanders, 11698 J. P. Henchie, 92452 L. C. Filby, Oct. 31st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—6/3913 H. G. Warburton, Aug. 24th; 128251 A. B. C. Emmett, Aug. 30th.

Sec. Lt. J. L. Brown (late R.F.C., Gen. List, on prob.) is confirmed in his rank as Sec. Lt. (O.), July 15th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (K.B.):—40080 S. Abrines, 50454 S. C. Ashby, 24573 W. Berry, 26673 A. Clarke, 767318 C. C. Davis, 13/54760 C. B. Harold, 89716 J. W. Shand, 117601 H. Suter, 451519 C. G. Wood, Oct. 25th

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—68716 L. E. Russell, July 23rd; TR/3/27160 H. C. McKinley, TT/02646 A. S. Rutherford, 02631 J. Pender, 100332 W. T. Jones, 522027 F. E. Smith, 72926 T. Smith, Aug. 4th; 230582 T. A. Codd, 545806 N. H. Allen, Aug. 27th; 36957 F. Bennett, 31668 A. H. Hill, L/6412 W. N. Scott, 528300 S. Medofski, Aug. 28th; 4603 R. W. Fyson, 75720 A. Reed, Nov. 1st; NK783 J. Gerrard, 175849 H. W. Brierley, 176770 G. H. Greenwood, Nov. 4th.

R. M. Fletcher is granted a temp. commn. as Sec. Lt. (Obsr. Officer), Oct. 8th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (S.):—B. W. Jackson, E. P. Senior, Oct. 23rd.

Lt. J. A. B. Lane (Lt., Hussars) relinquishes his commn. on ceasing to be empld., Sept. 16th.

Capt. H. E. Fletcher, D.F.C., relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Nov. 16th.

Lt. T. J. McInnis (Can. Local Forces) resigns his commn., Nov. 16th.

The date of appt. of Maj. (actg. Lt.-Col.) T. W. C. Carthew, D.S.O., is June 25th, 1918, and not as stated in "Gazette," July 5th.

The surname of Capt. (actg. Maj.) A. G. Waller is as now described, and not Walker, as stated in "Gazette," Oct. 29th.

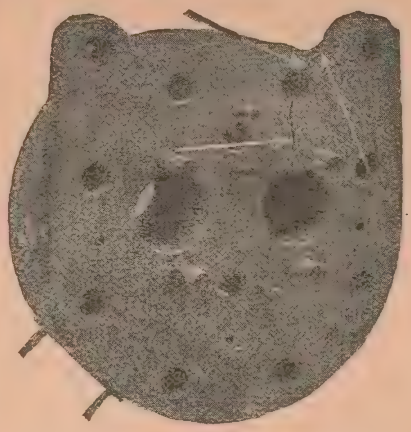
The notification in "Gazette," Oct. 22nd, concerning Lt. (actg. Capt.) H. W. Elliott is cancelled.

ADMINISTRATIVE BRANCH.—Maj. L. A. Burrowes to be actg. Lt.-Col. whilst empld. as Lt.-Col., Oct. 1st. (Substituted for notification in "Gazette," Nov. 1st.)

The following are granted temp. commns. as Capts., seny. April 1st:—W. V. Sherwell (Capt., Dev. R., Spec. Res.), April 23rd, prec. next below R. O. Abercrombie; R. G. Home (Capt., R. Highrs.), July 5th, prec. next below J. H. Tudhope, M.C.; E. St. C. Harnett (temp. Capt., Gen. List), Aug. 7th, prec. next below J. E. Vernon.

N. Robertson (Asst. Paymr., R.N.V.R.) is granted a temp. commn. as Capt., Sept. 24th.

D. G. Northam (temp. Lt., Worc. R.) is granted a temp. commn. as Lt., and to be actg. Capt. whilst empld. as Capt., July 1st, seny. April 1st.



This Diesel cylinder cover, 4 feet in diameter and weighing 1½ tons, was cracked between exhaust and inlet valve housings, also through holding down bolt, along side and across top of head. Average thickness of metal 1¾ inches. It was impossible to obtain replacement, as engine was of Belgian manufacture.

The repair was made by Barimar Scientific Welding Experts in 7 days, and was done under Barimar Guarantee. Barimar applied tests before despatch, but Mr. Teague's tests with full working load produced a working pressure of about 700 to 800 lbs. per square inch.

Rail broken parts direct to Barimar and save time, money and trouble. Any ordinary job is done on a Money-back plan. We make a good repair or cancel our charge. An estimate will be sent on receipt of the broken part. Send full particulars by post.

Mr. Francis Teague, the City Electrical Engineer of Bath, puts a Barimar Repair to the most exacting tests and passes it as sound in every way. He says, too, that shows a big saving over the cost of a replacement.

Messrs. Barimar, Ltd., 10, Poland Street, W.1.

Corporation Electricity Works, 7, Dorchester Street, Bath. 10th October, 1918.

Dear Sirs,—You will no doubt be pleased to learn that the Welding you recently carried out on one of our Diesel Engine Cylinder Heads was a complete success.

When the weld was cleaned up, it was found to be uniformly solid, and it could only be detected by the slight difference in colour between the original cast iron of the cover and the new cast iron used in the weld.

It was tested by hydraulic pressure without showing the slightest defect. It was replaced on the Engine and was heated to its maximum temperature by running the Engine on full load, and reduced to normal temperature by stopping the Engine and continuing the circulation of the cooling water, this being repeated several times in close succession, and the results were entirely satisfactory.

The temperatures and pressures to which this head are subjected are extremely high, and I congratulate you heartily on the result of your work.

The Engine in question is rated by the Makers at 250 H.P. per cylinder, and you have completely demonstrated the economy of your system, as the cost of this job to us was but a fraction of the cost of a new cylinder head

Yours truly,

Francis Teague, City Electrical Engineer.

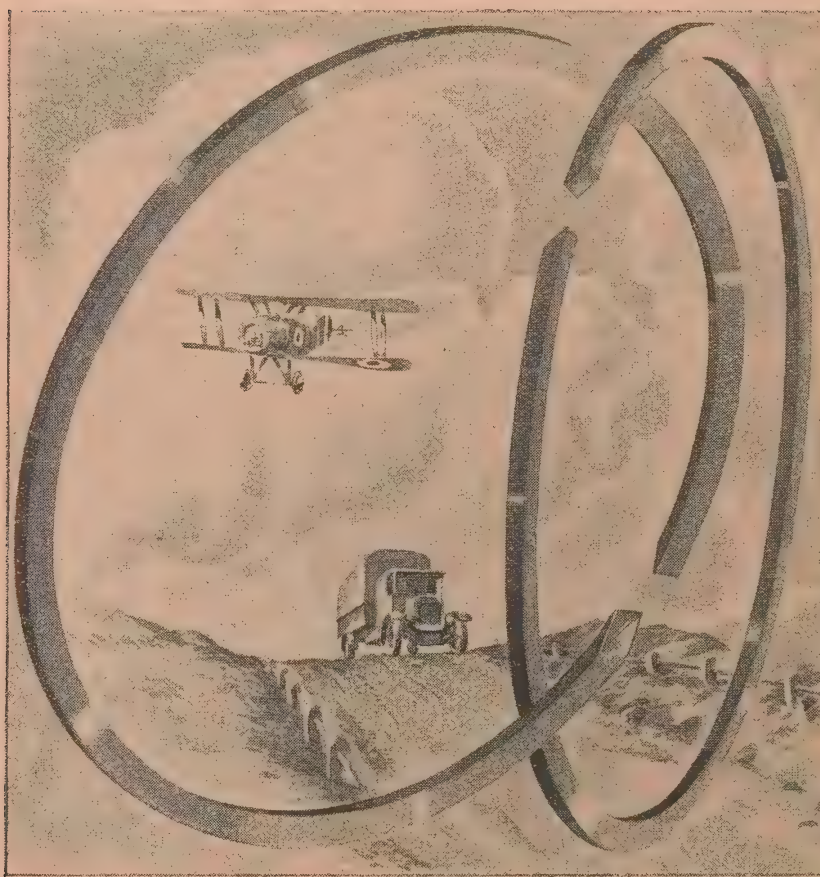
We never find it necessary to go beyond the actual statement of facts, and to prove our statements by unshakable evidence. Through long years of true service we have built up a business that is the largest of its kind in the World. We have the Resources, the Experience, and the Men.

Address all repairs to "B.C." Dept.

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PISTON AND PISTON VALVE ENGINEERS

READING

Sec. Lt. (actg. Lt.) E. G. Burden to be actg. Capt. whilst empld. as Capt., Nov. 1st.

Lts. (A.) to be Lts. :—J. E. Arnott, Aug. 7th; A. Waterworth, Oct. 20th.

Lts. (O.) to be Lts. :—E. R. Wilkinson, M.C., June 9th; H. H. Wade, Oct. 12th; (Hon. Capt.) C. C. Cole, Oct. 23rd; L. H. Scott, Nov. 1st.

W. B. Dunn (Maj., R. Dub. Fus.) is granted a temp. commn. as Lt., and to be Hon. Maj., July 13th, seny. April 1st, prec. next below C. Joiner.

Sec. Lt. (Hon. Lt.) R. D. Thomas to be actg. Lt. whilst empld. as Lt., Oct. 16th.

Sec. Lt. (Hon. Lt.) K. J. Falconer (Lt., Gord. Highrs.) relinquishes his commn. on ceasing to be empld., Nov. 1st.

Sec. Lt. T. Tickle relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Nov. 16th.

Sec. Lt. L. C. Wiltshaw resigns his commn., and is granted the hon. rank of Sec. Lt., Nov. 16th.

The following Sec. Lts. resign their commns., being physically unsuited for the duties of Pilots or Obsrs. :—E. I. Godfrey, R. J. Gwilham, Nov. 15th.

The initials of Lt. F. C. Meyer are as now described, and not as stated in "Gazette," Sept. 27th.

TECHNICAL BRANCH.—Capt. E. I. David to be actg. Maj. while empld. as Maj., Nov. 4th.

The following are granted temp. commns. as Capts. :—J. G. Y. Delmar-Morgan (Lt.-Comdr., R.N.V.R.), and to be Hon. Maj., Sept. 19th; T. Ridge (temp. Capt., R.E.), Sept. 26th; R. K. Paton (temp. Capt., Gen. List), Oct. 7th; C. Barrington (temp. Capt., R.E.), Oct. 27th.

Sec. Lts. to be actg. Capts. while empld. as Capts. :—(Actg. Lt.) A. J. Moore, Aug. 23rd (substituted for notification in the "Gazette," Sept. 6th); P. Coyle, Oct. 29th

Lts. to be Lts. :—H. B. Harvey, from (O.), Aug. 23rd; C. B. D. Campbell, from (Ad.), Sept. 16th.

S. W. Davis (temp. Lt., R.E.) is granted a temp. commn. as Lt., Oct. 3rd.

Sec. Lt. J. R. Cross to be actg. Lt. while empld. as Lt., Sept. 9th.

L. A. Hooper (temp. Sec. Lt., Lab. Corps) is granted a temp. commn. as Sec Lt., and to be actg. Lt. while empld as Lt., Oct. 7th.

The following Sec. Lts. (Hon. Lts.) relinquish their commns., and are granted the hon. rank of Lt. :—T. Bainbridge, on account of ill-health contracted on active service; R. L. Brancker, on account of ill-health, Nov. 16th.

MEMORANDA.—The following Lt.-Cols. are granted the actg. rank of Col. (without pay and allowances of that rank) while specially empld. :—R. G. Talbot, Nov. 4th, R. Cockburn, Nov. 7th.

Capt. F. H. Austen to be actg. Maj. (without pay and allowances of that rank) while specially empld., Nov. 15th

Lt. (actg. Capt.) J. Ramsay, M.C., is granted the hon. rank of Capt., and to retain the actg. rank of Capt

Sec. Lt. T. J. L. S. Boyd is granted the hon. rank of Lt.

Maj. J. G. Currie relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., Nov. 16th.

CENTRAL CHANCERY OF THE ORDERS OF KNIGHTHOOD,

ST. JAMES'S PALACE, S.W., Nov. 18th

The King has been graciously pleased to give orders for the following appointment to the Most Excellent Order of the British Empire, for distinguished service in connection with military operations in France and Flanders. To be dated June 3rd, 1918 :—

To be Member of the said Most Excellent Order :—

Sec. Lt. PERCY COOMBS, R.A.F.

(For an act of gallantry not in the presence of the enemy.)

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, Nov. 12th.

The following were severally introduced into the presence of the King, when His Majesty invested them with the Insignia of the Most Excellent Order of the British Empire :—

OFFICERS.—Lt.-Col. Thomas Monckton, R.A.F.; Lt.-Col. Edward Peal, R.A.F.

MEMBERS.—Maj. James McCrae; Capt. Frank Nash, R.A.F.; Capt. Neil Kennedy-Cochran-Patrick.

BUCKINGHAM PALACE, Nov. 18th.

The following officers were introduced into the presence of the King, when His Majesty invested them with the Insignia of the Divisions of the Order into which they have been admitted :—

BAR TO THE DISTINGUISHED SERVICE ORDER.—Maj. Kenneth Savory, R.A.F.

THE DISTINGUISHED SERVICE ORDER.—Lt.-Comdr. John Bower, R.N.

The King then conferred decorations as follows :—

THE DISTINGUISHED SERVICE CROSS AND BAR.—Capt. James Glen, R.A.F

THE MILITARY CROSS.—Lt.-Col. Robert Bourdillon, R.A.F.; Maj. Matthew Davies, R.A.F.; Maj. Lionel Gould, R.A.F.; Capt. Frederic Lawrence, R.A.F.; Capt. Stanley Stanger, R.A.F.; Capt. John Todd, R.A.F.; Lt. Sydney Cooper, Sherwood Foresters, attd. R.A.F.; Lt. Roy Crowden, R.A.F.; Lt. John Forsyth, Black Watch, attd. R.A.F.; Lt. Charles Gass, R.A.F.; Lt. Alfred Koch, R.A.F.; Sec. Lt. Frederick Bull, A.Cy.C., attd. R.A.F.

ADMIRALTY APPOINTMENTS.

The following appointments have been made :—

NOV. 12th.—WOMEN'S ROYAL NAVAL SERVICE.—Deput Prins.—Miss I. H. Kent, to H.Q., R.A.F., Nov. 4th.

Asst. Prins.—Miss E. L. Melrose, to Milton Air Station (temp.).

WOMEN'S ROYAL NAVAL SERVICE.—Senior V.A.D.—Miss E. Gunn, to

NOV. 18th.—WOMEN'S ROYAL NAVAL SERVICE.—Senior V.A.D.— Miss E. Gunn, to Torquay Air Station, temp., Oct. 17th; Miss D. Hollands, to Pulham Air Station, temp., Mrs. M. R. Podd, to Padstow R.A.F. Station, temp., Nov. 7th.

THE CASUALTY LIST.

MILITARY.

Reported Nov. 13th.

CANADIAN FORCE.—DIED.—Gilbert, Lt. A. E., Can. F.A., attd. R.A.F.

WOUNDED.—Hallonquist, Capt. J. E., Sask. R., attd. R.A.F.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONER IN GERMAN HANDS.—Macdonald, Lt. R. M., Man. R., attd R.A.F.

Reported Nov. 14th.

CANADIAN FORCE.—ACCIDENTALLY KILLED.—Bower-Binns, Lt. J., E. Ont. R., attd. R.A.F.

WOUNDED.—Wootten, Lt. G. B., N.B. R., attd. R.A.F.

Reported Nov. 15th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Westmorland, Sec. Lt. E., R.F.C.

AUSTRALIAN FORCE.—MISSING.—Goodson, Lt. E. J., F.C.; Palliser, Lt. A. J., F.C.; Rhodes, Lt. C. W., F.C.; Symons, Lt. P. W., F.C.

Reported Nov. 16th.

DIED OF WOUNDS.—Cannell, Lt. H. F. C., I.A., Cav. attd R.A.F.

Reported Nov. 18th.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Rentoul, Lt. A, Yeomanry, attd. R.F.C.

CANADIAN FORCE.—WOUNDED.—McKenzie, Lt. J. W. W. Ont. R., attd. R.A.F.

ported Nov. 19th

AUSTRALIAN FORCE.—MISSING.—Baker, Lt. T. C. F.C.

AIR FORCE.

Reported Nov. 14th.

KILLED.—Davidson, Sec. Lt. G. E.
Grigg, Sec. Lt. D. H.
Heard, Sec. Lt. M.
Toft, Sec. Lt. H.

DIED OF WOUNDS.—Bell, Lt. J. M. G., M.C.

DROWNED.—Mellor, Lt. N.

WOUNDED.—Cain, Capt R. C., D.F.C.; Hart, Sec. Lt. L.; Johnson, Lt R. F. S.; Kemshall, Lt. J. E.; King, Sec. Lt. E. W.; Leiper, Capt I. W.; Lewis, Capt. C. G. R.; McArthur, Sec. Lt. F. L.; Nicol, Sec Lt. M.; Siddaway, Lt. K. G.; Waller, Sec. Lt. P. J.; Warren, Sec Lt. J.; Watts, Lt. V. L.

MISSING.—Arnott, Sec. Lt H. D.; Goodman, Lt. G A.; Johnson, Sec. Lt. B.; Vickers, Sec. Lt. J. B.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Chainey, Sec. Lt. F. H.
Down, Sec. Lt. R.E.
Elworthy, Lt. L. M.
Holleran, Capt. O. C.
Payne, Sec. Lt. A. C.
Reid, Sec. Lt. J. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Cole, Sec. Lt. R. H.
Coope, Lt. N. N.
Mantle, Sec. Lt. H. S.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED WOUNDED AND PRISONERS OF WAR.—Anslow, Sec. Lt. F. F.
Pretty, Sec Lt H. J.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONER OF WAR.—Manley, Sec. Lt. P. S.

Reported Nov. 15th.

KILLED.—Cawley, Sec Lt. F.
Letts, Capt. J. H. T.
Gibbons, Sec. Lt. J. E.

DIED OF WOUNDS.—Bickell, Lt. W. B
Higgs, Sec. Lt. L. A.
Rucker, Sec. Lt. R. S.
Waterer, Sec. Lt. M. A.

WOUNDED.—Creamer, Sec. Lt. R. C., Hutchings, Sec Lt. W., Leslie, Capt. W. A., Wilderspin, Lt. C.

MISSING.—Cotterell, Sec. Lt. B. W., Crichton, Sec Lt. C. A., Eyres, Lt. L. H., Farguhar, Lt. R. W., Hampton, Sec. Lt. J. H., Maisey, Sec. Lt. H. C., Nesbitt, Sec. Lt. W. J., Newby, Lt. W., Perry, Sec. Lt. A. F., Russell, Sec. Lt. R. F., Stokes, Capt. C. H., Trembath, Lt. N. T., Turnball, Lt. T. H., Webster, Lt. J

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Stephenson, Lt. W. S., M.C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED WOUNDED AND PRISONERS OF WAR.—Brown, Sec. Lt. J. W.
Pym, Lt. F. G.

PRISONER OF WAR.—Francis, Sec. Lt. C. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Broadbent, Lt. G.
Gormley, Sec. Lt. A. J. C.
Johnson, Lt. F. R.
Mitchell, Sec. Lt. G. W.

PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONER OF WAR.—Conover, Lt. C. C.

Reported Nov. 16th.

KILLED.—Bennett, Sec. Lt. A. R.
Firth, Sec. Lt. P. R.
Horsley, Capt. O., M.C.
Isherwood, Sec. Lt. H.
Muir, Sec. Lt. G. V.
Schmolle, Lt. J. G.
Whitehead, Lt. G. W. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Clark, Capt. A. B., M.C.

DIED.—Dawkins, Lt. F.

DIED OF WOUNDS.—Brown, Sec. Lt. P. I.

WOUNDED.—Anderson, Lt. G. F., Davis, Sec. Lt. W. G., Elliott, Sec Lt. C. M. W., Fletcher, Lt. F., Howell, Lt. J. E., Hutson, Lt. P. G., Luckley, Sec. Lt. J. J., Mullen, Lt. M., Priestley, Sec. Lt. T. A., Thorn, Sec. Lt. H. J., Walmsley, Sec. Lt. H., Wootten, Lt. G. B., Woodall, Sec. Lt. W. S.

MISSING.—Boyd, Sec. Lt. C. N., Buchanan, Lt A., Cormack, Sec. Lt. P. F., Duff, Lt. R. W., Douglas, Sec. Lt. A. A., Dyke, Sec. Lt. E. P. W., Gemmel, Sec. Lt. H. J., Holmes, Lt. D. W., Lansdale, Sec. Lt. H., Lee, Sec. Lt. E. A. R., Lynn, Lt. F., Mulhall, Sec. Lt. H. F., Murray, Sec. Lt. R. B., Pritchard, Sec. Lt. J. C., Prosser, Sec Lt. J. E., Sleigh, Sec. Lt T. W.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Buckingham, Capt. W.
Johns, Sec. Lt. W. E.
Kemp, Sec. Lt. J. E.
Kier, Sec. Lt. J. N.
Lacy, Sec. Lt. J. B.
Lloyde, Lt. J. P.
Marchant, Lt. E. A.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Mackereth, Capt. J.

Reported Nov. 18th.

KILLED.—Brown, Lt. E. C.
Cowper-Coles, Sec. Lt. S. W.
Morgan, Sec. Lt F R.
Norris, Sec. Lt. R. W.
Prentice, Sec. Lt. A. J.
Renwick, Capt H. A.
Sedgwick, Capt. F. B.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Shier, Sec. Lt M. R.

DIED OF WOUNDS.—Hunt, Lt. W. V.

DIED.—Crossland, Lt. E. F.

WOUNDED.—Burns, Sec. Lt. E. S., Dey, Sec. Lt. F. W., Light, Sec. Lt

H. E., Reader, Sec. Lt. L., Reed, Capt. W. E., Smart, Sec. Lt. G. W., Stubings, Sec. Lt. C. A.

Missing.—Drummond, Sec. Lt. G. L. P., Hibbert, Sec. Lt. O. K., Howard, Lt. G. E. C., Iliff, Sec. Lt. G., Kidd, Sec. Lt. J. F., Mills, Sec. Lt. F. G., Payne, Sec. Lt. J. M., Scroggie, Lt. L. C., Segrave, Sec. Lt. P., Sparkes, Lt. C. P., Stafford, Sec. Lt. J. F., Tennant, Sec. Lt. P. S., Wilson, Lt. H.

Previously reported Missing, now reported Wounded and Prisoner of War.—Finch, Sec. Lt. F. E.

Previously reported Missing, now reported Prisoners of War.—Brumell, Lt. H. P.
Chreiman, Sec. Lt. W. W.
Patman, Lt. G. H.
Riddell, Lt. L. H.
Rose, Sec. Lt. R. H.

Cadets Killed.—Alexander, D. G.
Bennett, F. J.
Everett, F. S.
Froom, A. M.
Hamilton, W. W.
McCullum, R. P. F.
Masheder, J.
Rayner, E. B.
Saunders, H. C.
Warden, E.

Reported Nov. 19th.

Killed.—Fletcher, Sec. Lt. C. A.
Hunter, Lt. H. T.
McNeale, Sec. Lt. T. C.
Packham, Sec. Lt. C. T.

Died of Wounds.—Crump, Sec. Lt. F. L. D.
Lee, Sec. Lt. C. P.

Died.—Futcher, Lt. H. E.
Loxley, Capt. R. V. B.
Price, Lt. J. W.

Previously reported Missing, now reported Killed.—Pierce, Lt. J. B.

Wounded.—Argles, Sec. Lt. H. A., Becher, Capt. A. W. B., M.C., Bethune, Lt. W. J., Philcox, Capt. W. S., Pipe, Sec. Lt. J., Thomson, Sec. Lt. F. E., Toms, Sec. Lt. H.

Missing.—Aitken, Sec. Lt. J. T., Burden, Sec. Lt. S. E., Craig, Sec. Lt. W. D., Grant, Sec. Lt. H. C. R., Lacey, Lt. W. G., Rigby, Sec. Lt. C., Scott, Lt. F. C. D., Sumsion, Lt. F., Symons, Sec. Lt. J. G.

Previously reported Missing, now reported Prisoners of War.—Sabey, Sec. Lt. A. R.
Senior, Sec. Lt. H. H.
Sinclair, Sec. Lt. A. S.
Smailes, Sec. Lt. E. B.

Previously reported Missing, now reported Wounded and Prisoners of War.—Crossley, Sec. Lt. H.
Farrand, Sec. Lt. E. S.

Casualties among Wt.Os., N.C.Os. and Men of the R.A.F
The Dates are those of the Official List.

Killed

Nov. 14th.—Avery 141853 Air Mech., 3rd Cl., S. (Birmingham); Blatherwick 142889 Air Mech., 3rd Cl., G. G. (Stretford); Potts 217703 1st Pte. E. J. (Barking), Neighbour 217338 Serjt.-Mech. W. H. (Finsbury Park, N.); Troutbeck 62428 Air Mech., 1st Cl., C. W. (Clapton, N.E.).

Nov. 15th.—Adams 208456 Cpl. G. W. (St. Albans); Power 237821 1st Pte. W. E. (Deptford); Riding 199771 2nd Pte. W. C. (Oxford); Smith 65502 Air Mech., 3rd Cl., A. W. (Gillingham); Winstone 98953 Air Mech., 3rd Cl., A. J. (Bermondsey).

Nov. 16th.—Bradley 403127 Air Mech., 1st Cl. G. H. (Thongsbridge); Fleming 95128 Air Mech., 3rd Cl. T. D. G. (Bethnal Green); Hammond 39427 Cpl.-Mech. P. S. (King's Lynn); Lewin 82921 Air Mech., 3rd Cl., A. C. (Derby); Palin 285289 2nd Pte. F. (Cricklewood); Pyatt 79263 Air Mech., 3rd Cl., A. W. (Birmingham); Schofield 268695 2nd Pte. S. (Bradford); Tannahill 18204 Flt.-Serjt. R. J. (Greenock); Wallace 286761 3rd Clk. T. B. (S. Tottenham).

Died of Wounds.

Nov. 14th.—Andrews 120668 Air Mech., 3rd Cl., W. J. (Lydney, Glos); Hawden 160533 Air Mech., 3rd Cl., A. B. (Newcastle-on-Tyne); Nichol 43727 Cpl.-Mech. W. (Auchterarder); Wicks 95308 Air Mech., 3rd Cl., H. (Cookham Rise).

Nov. 15th.—Nichols 135828 Air Mech., 3rd Cl., C. (Newcastle-onTyne); Peace 10986 Air Mech., 3rd Cl., R. A. (Gosport); Phillips 286568 2nd Pte. J. W. (Burchfield Common); Seabrook 2102 Chief Mech. W. C. (Tring); Wall 104571 Air Mech., 3rd Cl., M. J. (New Kent Road).

Nov. 16th.—Davies 90388 Air Mech., 3rd Cl., J. (Liverpool).

Wounded.

Nov. 14th.—Baker 160887 Air Mech., 3rd Cl., K. W. (Lichfield); Berkeley 9849 Air Mech., 3rd Cl., T. C. (Hastings); Crawford 98483 Air Mech., 3rd Cl., J. A. (Stevenage); Edge 408462 Air Mech., 3rd Cl., W. T. (Wolverhampton); Fry 12333 Air Mech., 1st Cl., W. E. (Windsor); Hails 16069 Air Mech., 3rd Cl., G. J. (Newcastle); Hill 123628 2nd Pte. W. (Alford, Lincs); Randall 29450 Cpl.-Mech. G. R. (Uxbridge); Sharman 160528 Air Mech., 3rd Cl., F. T. (Bushbury, Staffs); Shergold 37820 Air Mech., 1st Cl., V. (Downton).

Nov. 15th.—Boggia 88411 Air Mech., 1st Cl., C. R. (Plymouth); Brown 107879 Air Mech., 3rd Cl., W. J. (Lincoln); Clark 104708 Air Mech., 3rd Cl., R. G. (Edinburgh); Collett 285016 2nd Pte. J. B. (Birmingham); Hordon 82065 1st Pte. C. W. (Dalston); Kitchener 39229 Air Mech., 1st Cl., J. G. (Islington); Lambert 98443 2nd Pte. W. (Leyton); Melbourne 160520 Air Mech., 3rd Cl., S. (Birmingham); Melville 111219 3rd Clk. J. A. (Aberdeen); Pickering 36710 Air Mech., 3rd Cl., L. (Birmingham); Robinson 52615 Air Mech., 3rd Cl., W. L. (Northampton); Saloman 64817 Air Mech., 3rd Cl., L. L. (Brick Lane, E.); Watson 38930 Air Mech., 3rd Cl. V. (Leicester).

Nov. 16th.—Braithwaite 4601 Serjt.-Mech. E. (Ulverston); Cooling 560 Air Mech., 1st Cl., G. F. (London, E.); Crute 25437 Air Mech., 1st Cl., W. H. (Winchester); Dixon 104398 Air Mech., 3rd Cl., J. (Leeds); Heading 12010 Air Mech., 1st Cl., R. D. (Maidenhead); Heap 20197 Cpl.-Mech. L. L. (S. Hackney); Jones 244842 2nd Pte. J. P. (near Wrexham); Kaye 212021 2nd Pte. W. (Milnbridge); Kett 405945 Air Mech., 3rd Cl., G. E. (Norwich); Lingard 3670 Serjt.-Mech. J. (Sutton Bridge); McLean 122111 2nd Pte. J. K. (Dundee); Mello 3191 Cpl.-Mech. F. (Halifax); Mitchell 36389 Air Mech., 1st Cl., R. G. (West Croydon); Munns 83616 Air Mech., 3rd Cl., F. W. (Brighton); Prentice 42709 Cpl.-Mech. W. (Biggar); Ship 407439 3rd Clk. J. R. (South Acton); Smith 98226 2nd Pte. A. (Empshott).

Missing.

Nov. 14th.—Platt 212033 2nd Pte. W. (Swinton, Manchester); Tate 104027 Air Mech., 3rd Cl., G. H. (Dalston); Tozer 57318 Serjt.-Mech. H. W. (Bristol).

Nov. 15th.—Turner 128924 Serjt.-Mech. J. F. (Clayton, Manchester).

PERSONAL NOTICES.

NAVAL.

Death.

FARRALL.—Lt. James Garvey Marshall Farrall. R.A.F., late R.N.A.S., who was reported missing on July 18th, is now presumed to have been killed in action at sea on that date. He was the only son of Mrs. Farrall and the late James J. Farrall, C.E., M.R.I.A., Westmoreland Street, and Sandycove, Kingstown, co. Dublin.

MILITARY.

Deaths.

BUCKINGHAM.—Lt. Philip Edward Buckingham, M.C., R.A.F., was reported killed on Nov. 8th. He was the eldest son of Mr. and Mrs. E. Buckingham, of "The Limes," Newbury, and was born on Nov. 14th, 1896. He was educated at Newbury Grammar School and Churchers College, Petersfield. He played in the first XI for "Churchers" both in cricket and football, and represented his college at Hampshire County sports. He was also a lover of horses and a keen motor cyclist. After an operation, he received his commission in May, 1915, and trained with the 10th Bedford Regt. and the 12th R.W. Kent Regt. On going to France in June, 1916, he was attached to the 37th T.M. Battery, and was awarded the M.C. on Nov. 1st, 1917. Last June he returned to England to join the R.A.F., and obtained his "wing" in October, joining the 7th Squadron early in that month.

CAVE.—Lt. Arthur Douglas Cave (Durham Light Infantry, attd. R.A.F.), who died on Nov. 10th at the Chatham Military Hospital from pneumonia following influenza, was the eldest son of Mr. and Mrs. S. Cave, 16, College Terrace, Brighton, and of Colombo, Ceylon.

COLE.—Capt. C. C. Cole, R.A.F., formerly of the 13th Essex, who died on Nov. 2nd, was the husband of Grace Cole (née Dowling), 46, Woodlands Avenue, Wanstead, Essex.

EDWARDS.—Lt. Brian Wallie Edwards, of St. Paul's School, R.A.F. (formerly Lt., R. Dub. Fus., and of Observation Section, R.E.), who died on Nov. 10th of pneumonia following influenza, was the younger son of Richard and Lucy Edwards, 62, Abinger Road, Bedford Park, W.4. He was 23 years of age.

MACVICKER.—Lt. John Everard Churchill Macvicker, R.A.F., was reported missing on July 22nd, but is believed to have been killed on or about that date. He was the eldest surviving son of Dr. and Mrs. Macvicker, of Street, Somerset, and grandson of the Rev. E. B. C. Churchill, sometime vicar of All Saints, Portsea. Born at Isleham, Cambs., in 1897, he was educated at St. Winifred's, Kenley, Surrey, and Aldenham School (Paulls). A fine athlete, he was captain of football at his preparatory school, and during his first term at Aldenham played for his House, and later was in the first football and cricket teams. Leaving Aldenham early, he came to London to fill the place of one called up for the war, but very soon he joined the London University O.T.C., and from there exchanged to a Cadet Corps of the R.F.C. in October, 1916. He obtained his commission in February, 1917, and his "wings" in the following May. He was a scout pilot and had been doing night flying on home defence till he went overseas in May, 1918. He was killed during an attack on a patrol of German aeroplanes who were in superior numbers.

MAITLAND.—Capt. Henry Maitland Maitland, Intelligence Corps, who died at Cherbourg of pneumonia following influenza on Nov. 10th, was the younger son of the late Arthur Maitland, M.A., J.P., barrister-at-law, of Shudy Camps Park, Cambridgeshire, and only brother of Brig.-Gen. E. M. Maitland, D.S.O., R.A.F.

He was educated at Marlborough and Selwyn College, Cambridge. In 1910 he took up flying, and was one of the first pupils to learn to fly at Salisbury Plain, with the Bristol Aeroplane Company, under M. Henry Jullerot, now Major, R.A.F. His flying career came to a premature close owing to a severe accident with his Bristol biplane, in which he broke both his legs and suffered other minor injuries.

Being in South America at the outbreak of war, he immediately returned to this country and joined the Motor Cyclist Corps, going out to France as a second lieutenant at the end of 1914. Subsequently he transferred to the Intelligence Corps, and served with distinction for the last 3½ years as an intelligence officer employed on special duties both at Dunkirk and elsewhere. For these services he was twice mentioned in dispatches, and promoted captain last August.

Capt. Maitland was a regular contributor to the "Bystander," his articles appearing under the heading of "Jack Johnson." He was also the author of "Lighter-than-Air," an early book of aeronautical humour which has never been surpassed for light-hearted fun combined with clever satire:

One who knew him writes:—

Personally, Harry Maitland was one of the most lovable of men. He was physically brave and possessed wonderful pluck and determination, as those who had to do with him during and imme-

diately after his short flying career well remember. Lying on his back on a wheeled stretcher, with both thighs in splints and suffering continual pain, he was none the less as full of fun and humour as anyone could be when in robust health. Beneath a cheerfully irresponsible manner he possessed mental ability of a high order, and the world at large, no less than the King's Service, is the poorer by the loss of a very gallant gentleman.

He was buried at Cherbourg on Monday, Nov. 11th, while all the world was rejoicing over the cessation of fighting, yet one feels that Harry Maitland must have rejoiced with the rest, for his was ever a rejoicing spirit.—C. G. G.

PITOT.—Sec. Lt. Maurice L. Pitot, R.E., attd. R.A.F., who died of wounds on Oct. 8th at a casualty clearing station, was the eldest son of Mr. and Mrs. Maurice P. Pitot, The Hey, Wokingham, Berks. He was 21 years of age.

SCOTT.—Lt. Stuart Harvey Scott, R.A.F., reported missing on Sept. 29th, and now reported killed, was the son of Mr. and Mrs. Donald J. Scott, of Mayfield Road, Sanderstead. He was educated at Whitgift Grammar School, Croydon, where he gained his colours as a member of the football XV and shooting VIII. At the age of 16 years and 10 months he entered the R.F.C., and, having obtained his "wings" in March of the present year, he went to France at the end of that month to join the 6th Squadron, with which he served as a pilot until he was killed, within a fortnight of his 18th birthday.

WOODCOCK.—Capt. and Flt. Comdr. Frederick Woodcock, R.A.F., who was killed in action on Oct. 31st, was the only son of Mr. F. A. Woodcock, solicitor, and Mrs. Woodcock, of Ravenswood, Whalley Range, Manchester, and was 21 years of age. He was educated at Riber Castle, Matlock, and at Harrow School. After leaving Harrow (July, 1914) he matriculated at Victoria University, and subsequently at London University (First Division), and was articled to his father, passing the intermediate examination for the LL.B. degree in June, 1915. In August, 1915, he received his commission in the Royal Garrison Artillery, and went to France (Ypres) in the following November. In April, 1917, he was attached to the Royal Flying Corps, and in September in the same year was awarded the Military Cross "for most valuable work, and on one occasion, in a very strong gale, flying low, he obtained information of the greatest importance."

ENGAGEMENT.

STREATFEILD—BOOTH.—The marriage between Capt. G. H. B. Streatfeild, M.C., R.A.F., younger son of Maj. and Mrs. Hugh Streatfeild, of Ryhope, Co. Durham, and Barlay, Balmaclellan, Kirkcudbrightshire, and Marjorie, youngest daughter of Mr. and Mrs. Charles Booth, of 10, St. Bede's Terrace, Sunderland, will take place at Holy Trinity Church, Brompton, on Dec. 11th, at 1.45.

MARRIAGE.

KINGDON—LUNT.—On Nov. 12th, at Keston Parish Church, Capt. Hubert William Kingdon, 8th Hants and R.A.F., was married to Annie Isabelle Gretchen, widow of Capt. Lunt, 5th Royal Warwickshire Regt.

BIRTHS.

BOTTOMLEY.—On Nov. 9th, at Dorchester Nursing Home, Hull, the wife of Capt. Norman H. Bottomley, A.F.C., E. York R. and R.A.F., of a son.

JONES.—On Nov. 14th, at Dyffryn Road, Llandrindod Wells, Radnorshire, the wife of Capt. I. R. G. Jones, Welsh Regt. (T.F.) and R.A.F.—a daughter.

ODDEY.—On Nov. 11th, to Capt. W. Oddey (Essex Regt. and R.A.F.) and Mrs. Oddey, of "Stavordale," Emerson Park, Hornchurch—a son.

* * *

DEATHS.

LEAKE.—On the 6th inst., of influenza, followed by pneumonia, at 12a, Old Court Mansions, Kensington, Hilda Cunningham, the dearly loved wife of Capt. Kenneth Leake, Loyal North Lancs. Regt., attd. R.A.F., and youngest daughter of Mrs. Arthur Franklyn and the late Mr. Edward Hacking, of Prince's Park, Liverpool.

BOTTOMLEY.—On Nov. 9th, at Dorchester Nursing Home, Hull, Margaret, wife of Capt. Norman H. Bottomley, A.F.C., E. Yorks R. and R.A.F., also their infant son Reginald Paul.

* * *

Capt. Norman Howarth, R.F.C., was officially reported missing on Sept. 6th, 1918, and is now unofficially reported as having died. The last news received by his Squadron was that he was last seen diving very steeply with a German aeroplane behind him. Mrs. Howarth will be grateful to anyone who is in a position to give further information concerning the fate of her husband. Letters should be addressed to her at Fairfields, Purley Knoll, Purley.

AIR FORCE.

DEATHS.

AUDEN.—Cadet Geoffrey William Auden, R.A.F., who died of pneumonia on Nov. 4th at the Hampstead Military Hospital, was the younger son of the Revd. Alfred and Mrs. Auden, Church Broughton Vicarage, Derby. He was 18 years of age.

CREESE.—Lt. Alfred Richard Creese, R.A.F., who died on Nov. 13th, of pneumonia, at Cliff Military Hospital, Felixstowe, was the younger son of the late Franklin W. Creese and Mrs. Creese, of 41, Langdale Gardens, Hove. He was 20 years of age.

JONES.—Sec. Lt. Eric Berkeley Jones, R.A.F., aged, 23, who was the eldest son of the late Mr. Isaac Jones and Mrs. Jessie Trowbridge Jones, of 21, Rochester Road, N.W., was accidentally killed on Nov. 11th whilst flying.

KEARNEY.—Lt. Edward Kearney, R.A.F., who was killed in action on Oct. 27th, was the grandson of the late Staff-Sergt. W. Kearney, of Sandhurst, and Westward Ho, Devon.

LANE.—Sec. Lt. Reginald William Lane, R.A.F., who was killed in action on Nov. 9th, was the elder son of Harry and Margaret M. Lane, of Chilton House, Streatham Common South, S.W. He was 20 years of age.

MEES.—Lt. Ian Rudolf Mees, R.A.F., who was killed on Nov. 14th as the result of an aeroplane accident, was the only son of Mrs. Mees, of 3d, Pembridge Square, W., and the late A. R. Mees, of Glasgow. He was 20 years of age.

ROYSTON.—Lt. Norman Royston, R.A.F., of H.M.S. "Fearless," who died on Nov. 5th of septic pneumonia on a naval hospital ship, was the youngest son of Mr. and Mrs. E. R. Royston, of Maulden, Bedfordshire. He was 19 years of age.

WEBSTER.—Sec. Lt. Arthur Nugent Webster, R.A.F., who was reported missing and is now known to have been killed in aerial action on June 5th, was the younger son of Mr. and Mrs. A. Webster, Thickett Road, Anerley. He was 19 years of age.

WILSON, BOOTH, AND BRADSHAW.—A serious aeroplane accident occurred near Dromore, co. Tyrone, on Nov. 14th. It appears that three aeroplanes, one of which was manned by Capt. Bown, R.A.F., the second by Lt. James M. Wilson, R.A.F., and Corpl. T. G. Bradshaw, and the third by Lt. Booth, R.A.F., and Air Mechanic Gordie, left Galway for Omagh in the morning, and all went well until passing near Dromore, when Mr. Wilson's and Mr. Booth's machine collided and crashed to earth, the former's machine in flames. Mr. Wilson and Corpl. Bradshaw were killed instantly and the bodies badly burned. Mr. Booth sustained very severe injuries, from which he died in an hour or two, but Air Mechanic Gordie sustained a number of fractured bones, and good hopes for his recovery are entertained. Capt. Bown saw the accident, and alighted on most difficult ground, and rendered what assistance he could. Mr. Wilson's aeroplane was a mass of flames, and little assistance could be rendered. Mr. James M. Wilson, R.A.F., was a son of Mrs. R. Wilson, of Argyle Street, Glasgow. Corpl. Bradshaw was a son of Mrs. Bradshaw, 4, Stanhope Street, Queen's Park, Northampton.



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Engagements.

CAPREOL—SENIOR.—The engagement is announced between Lt. E. L. Capréol, R.A.F., third son of Mr. F. C. Capréol, of Ottawa, Canada, and Kathleen, only daughter of the late E. W. Senior, M.R.C.S., L.R.C.P., of Herne Bay, and Mrs. Senior, of 63, Clarence Road, Teddington.

LEETE—GUTHRIE.—The engagement is announced between Capt. W. W. Leete, A.F.C., R.A.F., only son of Mr. and Mrs. W. G. Leete, of Birkenhead, and Marian Elsie, youngest daughter of Mr. and Mrs. Alexander Guthrie, of Heswall, Cheshire.

MORE—PARKER.—The engagement is announced between Col. Robert Henry More, C.M.G., R.A.F., second son of the late R. Jaspar More, M.P., of Linley, Shropshire, and Mrs. More, of Rhadley, Shrewsbury, and Phyllis Blanche, younger daughter of the Hon. Frank and Mrs. Parker, of Wilton House, Eaton Square, S.W.

WINTER—GARDNER.—The engagement is announced between Lt. John W. Winter, R.A.F., only son of Mr. and Mrs. H. Gordon Winter, of Wramplingham, Norfolk, and Phyllis Grace Gardner, only daughter of the late Rev. W. R. Gardner, rector of Huntingdon, and Mrs. Gardner, of Hemingford, St. Ives, Hunts.

Marriage.

MANBY-LEAN.—On Nov. 11th, at St. Mary Abbot's, Kensington, Lt. Reginald Manby, R.A.F., only son of Mr. and Mrs. Manby, of Oaken, Staffs., was married to Marjorie, younger daughter of Lt.-Col. W. W. Lean, late Bengal Cavalry, of 9, Stanford Road, W.8, by the Vicar.

Births.

BROWN.—On Nov. 14th, at 19, Drumsheugh Gardens, Edinburgh, the wife of Capt. G. W. A. Brown, R.A.F., of a daughter.

CURWEN.—On Nov. 13th, 1918, at Woodlands, Harrietsham, Kent, the wife of Sec. Lt. Charles Curwen, R.A.F., of a son.

SWAIN.—On Sunday, Nov. 17th, at her mother's residence, 33, First Avenue, Hove, Iris (née Hillman), wife of Capt. C. Swain, R.A.F., of a son.

TINDALL.—On Wednesday, Nov. 13th, at a nursing home at Eastbourne, Dorothy, wife of Lt. Reginald Tindall, R.A.F. (on Active Service)—a daughter.

WRIGHT.—On Nov. 11th, at 14, Vicarage Gardens, Kensington, W.8, to Joyce (née Fletcher) and Capt. Francis Whitworth Wright, R.A.F.—a daughter (Mary Frances).

* * *

Lt. F. J. Ortweiler, R.A.F., arrived in England on Oct. 31st, after escaping from Stralsund Camp, Germany.

REPATRIATED PRISONERS.

It was notified by the War Office on Nov. 13th that the undermentioned officers have arrived at Alexandria from captivity in Turkey :—

Flt. Comdr. T. R. Hackman, R.N.A.S.
Flt. Sub-Lt. W. E. Foster, R.N.A.S.
Lt. S. J. Wise, R.N.A.S.
Lt. A. Ward, R.N.A.S.
Capt. E. A. Floyer, I.A.R.O., attd. R.F.C.
Capt. B. S. Atkins, Indian Army, attd. R.F.C.
Lt. T. E. Lander, H.L.I., attd. R.F.C.
Lt. C. W. Hill, R.F.C.
Lt. J. B. Welman, R.F.A. and R.F.C.
Capt. D. W. Rutherford, Aust. F.C.
Lt. L. W. Heathcote, Aust. F.C.
Lt. V. J. Parkinson, Aust. F.C.
Lt. L. H. Smith, Aust. F.C.

A UNITED SERVICES CONFERENCE.

Under the authority of the Admiralty, the War Office and the Air Ministry, a Conference was held on Tuesday, Nov. 5th, at the Horse Guards, Whitehall, to consider and report upon the best method of fostering the spirit of comradeship and mutual help among all who have served and are serving in the Royal Navy, the Army and the Royal Air Force. The Conference was also directed to discuss the co-operation with the Forces of the Overseas Dominions with a view to promoting throughout the Empire a feeling of comradeship among all who have served in the present war.

The Conference was constituted as follows :—

Chairman.

General Sir Ian Hamilton, G.C.B., D.S.O.

Members.

One officer, one other rank, one member of the W.R.N.S.—nominated by the Admiralty; one officer, one other rank, one member of the Q.M.A.A.C.—nominated by the War Office; one officer, one other rank, one member of the W.R.A.F.—nominated by the Air Ministry. Representatives of the following Forces :—Overseas Military Forces of Canada, Australian Imperial Force, New Zealand Imperial Force, South African Overseas Expeditionary Force. One officer, one other rank—representing each of the following :—The Grand Fleet, the British Armies in France, the Military Forces in Great Britain, the Army in India.

Honorary Secretary.

Maj. H. Jellicorso (Reserve of Officers).

On the recommendation of the Conference a consultative committee has been formed, with General Sir Ian Hamilton as chairman, consisting of nine members composed of equal numbers of officers past or present, and other ranks past or present, as well as three women's representatives, of the Royal Navy, the Army, and the Royal Air Force. This committee has power to add to its number with a view to securing adequate representation of all interests concerned.

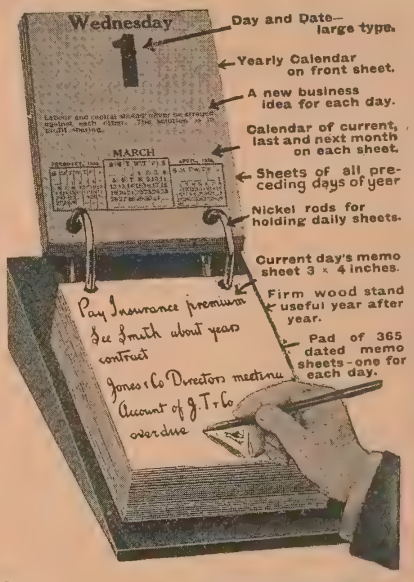
The committee will take evidence from existing organisations working on behalf of those who have served or are serving, will collect facts concerning the same, and will report on the best method whereby the existing effort may be utilised or co-ordinated to secure the first object discussed at the Conference, and what further effort in this direction is needed.

A second committee has also been formed under the chairmanship of Admiral Viscount Jellicoe, G.C.B., O.M., to consider the promotion of comradeship throughout the Empire among all who have served in the present war. This committee will consist of two members of the Imperial Forces and five members representing India, Canada, Australia, New Zealand, and South Africa respectively.

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SOME BOOKS TO READ.

ON OBSERVATION BALLOONS.

The United States of America, unused of recent years to the practice of civilised warfare, has accepted recent opportunities with a boundless enthusiasm not uncommon in the amateur. The love of record-breaking still animates their actions, and with vigour they have set to work on the largest army and largest navy in the world in order that they may claim a share, which unkind Fate will not permit to be the biggest, in the greatest war that has as yet been waged in this world. Determined effort in these matters carries with it a host of vices as well as an abundance of virtues. A flood of pseudo-military literature sufficiently steeped in anachronisms to have been intelligible to their Graces the first Dukes of Marlborough and Wellington has burst freely on a willing country. One of them, the book quoted at the foot of this piece, has between its covers most of the obsolete information available as to the military management of the non-dirigible balloon. The author, whose misguided selection of parents is clearly indicated in his name, leaves to his publisher the unhappy task of stating in a preparatory note that his work is based on "the Balloon Manual of the German Army" as issued in the days immediately preceding the present war. Its value, if any, is, therefore, clearly historic, and the young balloonist will learn nothing from its pages save the few hackneyed notes on the last few sheets as to the manners and habits of free balloons.

The book abounds in drawings of the Drachen balloon and its parts, a type which has disappeared from war for at least two years. A chapter is devoted to "company training," including instructions as to the correct control of a sword when used by a company commander (a) as a means of direction and (b) as an ornament. The habits of "gunners" in a balloon company are detailed, but no description is given of the "gun," which, we are told, they carry in the "outer hand." The methods of manœuvring wagons also receive attention, and are illuminated by such phrases of wisdom as: "Land obstacles which cannot be gotten over by the single team or wagons must be driven around under the command of the commander without interrupting the procession of the neighbouring ones, and must come back into their places as quickly as possible." This procedure would hardly seem a proper method of treating natural features of the landscape.

No object is attained by a further examination of this book. Its production as a so-called military manual is a mistake on the part of the publisher and an impertinence on that of the author. Its price in America is 3 dollars. I have not been informed as to its price in Great Britain.

Military Observation Balloons (Captive and Free). By Emil J. Widmer. Pp. viii., 152. Illustrated. (Crosby Lockwood & Son, 1918.)

LA GUERRE DES NUES.

For all they abuse us roundly, and call us "cut-throat bandits on the path to fame," I do assure you, dear reader, that critics are not the malevolent breed you are led to suppose them. It is true that when enraged by bad work they emulate the octopus, and eject "an inky and venomous fluid," but when they are pleased they purr like the "leal true cat" of Calverley's poem.

So I must confess that when I see a new book by M. Jacques Mortane, as "La Guerre des Nues," which lies before me now, the harsh word and the clinging epithet flee from me, and I could be kind to a taxi-driver. Moreover, the author has written a delicate and disarming dedication in the fly-leaf, which is in itself most disturbing to integrity!

This time, our brilliant contemporary has sounded a deeper note, collating, as he has done, the letters of pilots who will fight no more. They are of all shades and tones, these little missives, gay, inconsequential, sober; and, in not a few, may be read a fore-knowledge of what was to come. In a rather fine preface Lieutenant Renée Fonck suggests that the book should be used in the French schools—so that certain things may not be forgotten. . . .

There is a long and sprightly screed from Guynemer, who is justly enraged because folk have been telling him his victories are due to chance, he is a "*veinard*," a spoilt child of fortune. This is irritating to a craftsman, and he tells them—"with a smile that fain would bite," how—"the chase is a delicate piece of work, which is far from being within the reach of all. A pilot is to the aeroplane what de Pachmann is to the piano. There is inspiration in the swirl of the matador of the air. Some employ a strict and undeviating method. Some never attack twice alike, and of these I would say that they are apprentice-corpses!"

Scrappy notes from the Sous-Lieutenant Dorme reveal the born fighter—"Mon cœur est en fête"—"My heart's afire, and I am going to eat the ears of the Boche." To that end he and a pal pack their groaning fuselage (this was in 1915) with 40 kilos of heavy paving stones, which they deposit on the heads of the

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IN this great hour of triumph we desire to express our sincere congratulations and deep gratitude to the members of the Royal Air Force for the brilliant part they have played throughout the whole of this intense struggle for freedom and justice.

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enemy with appropriate maledictions. I dare not quote their description of this operation, it is a thought too . . . er, medical.

The lean aristocrat, de Beauchamp, goes out to bomb Mezières-Charleville. "We arrive at our objective in the darkness. While we were seeking for the headquarters, my friend Dessirier's machine was hit, and went down in flames, and it was by this most sinister light I saw my target." . . . The same writer characterises his flights over Munich and Essen as being "dull as the lives of happy peoples"—all he remembers is a harsh and grinding fatigue.

On one of his long-distance jaunts he decided that as the wind was unfavourable, and he "loved travel," he would cross the Alps and land in Italy, which he did with as little concern as a suburbanite taking a tram. He had a narrow escape of being brought down in Austria, but "it was not the 'pain KK' for me this time!"

Follows a description of a "day not deprived of emotions." "Five cocks, one morning, glide in the high arches of the Heavens, commanded by me. Afar I descry a group of six clients, which becomes eight, and eternally growing resolves itself into 22 cuckoos in all. '*Ca va venir chez nous!*' What joy! The number disquiets not the bold single-seater. We are about to laugh. I precipitate myself upon the group, that it shall dismember itself. I pull not badly on two biplanes, but a third attaches itself to my tail. This is of an impertinence! I turn and let him have a serious syringe. He descends in eddies, soul-sickening, to fall dismembered."

Captain Roeckel receives a Baby Nieuport, and rejoices that he can "take his new little horse into the battle." "This morning I was all bored, but now, what a *chic* day, I am ravished, ravished! To dissipate my black ideas I took out the Baby. The chase was fructuous. Six L.V.Gs., photographing just like trippers over our lines. What is it, six Boches? I jump from one to the other. One I descend, the others gathering their skirts, flee. *Epatant!* No more the black dog sits on me!"

A few weeks later they cripple his Baby for him, he sheds salt tears over it, but—"though the wings are shattered, the bird still lives."

Sous-Lieutenant Quennehen, who does things worthy of Cyrano de Bergerac, and writes little shy diffident notes to his people about them, found the atmosphere rather too thickly speckled with iron at 900 metres one fine morning. "I received a sufficiency of their infamous missiles, and cut out my motor to hear better. Suddenly, I dropped head first behind a hill to simulate

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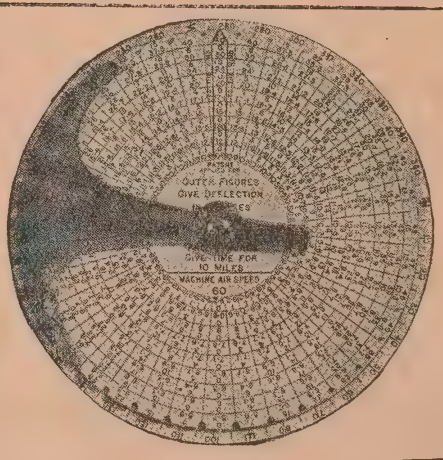
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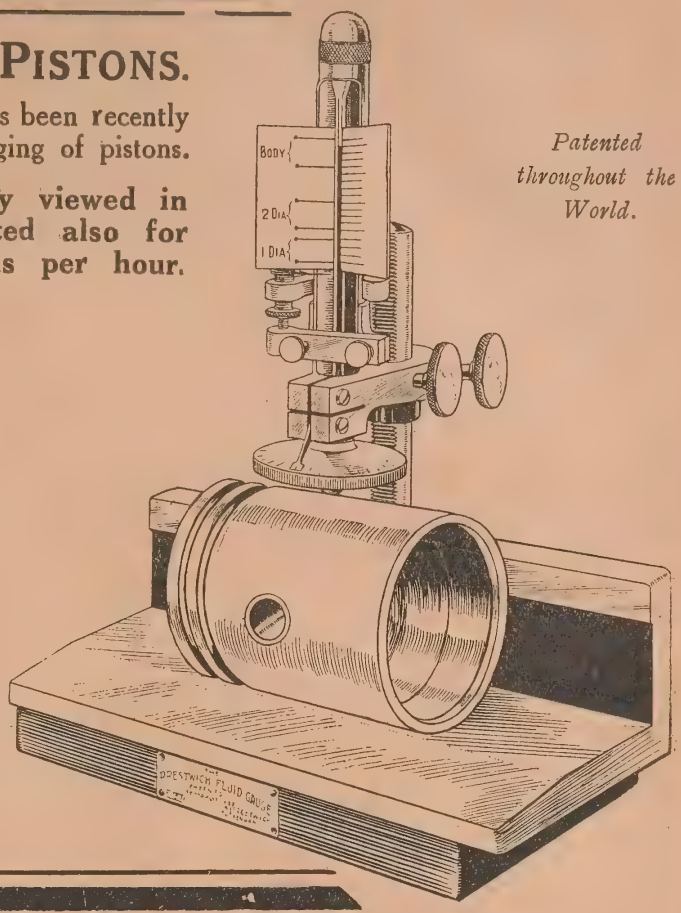
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a fall." Next day, the hated Boche announced his death in a communiqué, so on a following flight he dropped them a polite little note:—

"The Sous-Lieutenant Quennehen has the honour to inform you that, for a pilot brought down by you (according to your communiqué) he bears himself not too badly. He hopes still to procure for you numerous emotions."

That the last promise was scrupulously kept the Légion d'Honneur, the Croix de Guerre, and the Médaille Militaire attest.

We learn how in their lighter moments six young pilots put advertisements on one of the more sprightly Parisian papers: "AVIATOR wishes a godmother, young and disinterested." The correspondence seems to have been rich and rewarding, and a competition was instituted in connection with it, the game being to see who could first induce his fairy godmother to send her photo!

As a chronicle of gallantry, fine and unpretending, the book should be bought. (It can be had from the Edition Française Illustrée, 30, Rue de Provence, Paris, price four francs.).—R.H.B.

MOTOR MECHANICS.

I grant you that we have nothing in London comparable to those adorable bookstalls all along the banks of the Seine, under the plane-trees, but the Farringdon Road, although redolent of fried fish, is not so desperately bad as a pis-aller.

You will find all the débris of a great city there on the barrows. There one can buy real gold nibs at ten a penny, leaky bicycle tubes, fruit at a price, piles of those cheap American novels—shallow as a table d'hôte soup—and, dearest joy of all, you can claw over the dusty treasures of the penny box. At this moment I am savouring a new trove, the "Proverbys of Saynt Bernarde." This sage lived in 1480, and borrowing old Samuel Butler's words one can say of him:—

"He knew what's what, and that's as high
As metaphysic wit can fly!"

Since "everybody marries a little" I will share some of his aphorisms on womenfolk with you; they might be useful at home: "A woman having clothes, and evir desiring more, lakkyth steadfastness." "In heryng of othir men's wyfes thou shalte aswayge the sorrowe of thyne owne." He gravely warns those who frequented the music halls of the time: "See what followyth to love them that love mynstrels!" Though a saint, he is sound on dogs: "Small whelpes leave to ladies and clerkes," and this, too, comes appositely: "Debylitie of an enemye is no sure peace, but truce for a season."

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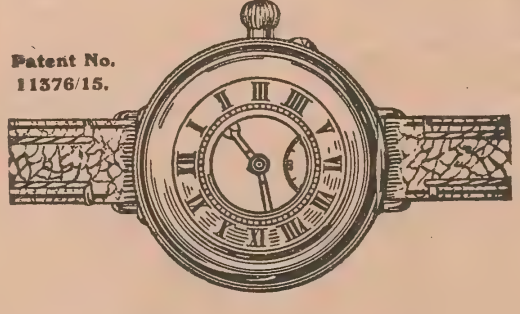
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And this brings me in some fashion to my subject: "Wyse labour and mishappe seldom meet together, but yet sluggedness and mishappe be seldom dyssevyrde." The young mechanic who buys and carries about with him this new book of the Temple Press people, "Motor Mechanics" (2s. 6d. net), has in a measure insured himself against the tongue-lashings from which ignorance is never secure. So useful a manual of the art of tuning up should be well thumbed by those to whom it is addressed.

It explains in simple terms the theory and functional working of the internal combustion engine, expounding at length the means for obtaining increased power, higher speed, and economy generally. With the revisions that have been incorporated I should think that it would be the very thing needed by cadets in training for the technical branches of the Forces. Many a good engine might be saved from going "dud" if manuals of this character were studied as they should be.

After the usual recital of the principles of the four-stroke engine the treatise enters into bore and stroke arguments, theories as to compression and cooling, overheating, and the meaning and calculation of horse-power. Besides the explanatory illustrations, which are particularly commendable, detailed instructions are given at every stage as to how best to secure the maximum of efficiency, coupled with complete expositions of the reasons underlying these adjustments. The reader is gently prodded into deducing for himself the necessity for what is suggested, and then shown the best means of attaining his end.

The chapter on ignition systems conveys information which the otherwise competent artisan often lacks, and the problems of lubrication are treated in a manner which, while always lucid, can be fairly termed scientific. The vexed question of valve timing, overlap, and scavenging are gone into lengthily, and with good reason, for this is another heel of Achilles in the case of many assemblers.

I do not remember having seen the theory of induction pipe design so adequately covered in any manual of this nature, and the elucidation given should be of considerable value. Modern carburetters, such as the Zenith, Solex, and Claudel-Hobson, are carefully described and admirably illustrated, and the adjustments peculiar to each breed indicated. The last point is too frequently overlooked, and the harassed A/M. has to correct his manipulations by the light of nature.

I have never loved Hogarth's "Industrious Apprentice." He was too good to be true, and his smugness annoyed one, but if his congener of to-day would go short of an evening's amusement for the sake of a little volume like this, he would find his path considerably smoothed, and the powers that be more indulgent towards him.—R. H. B.

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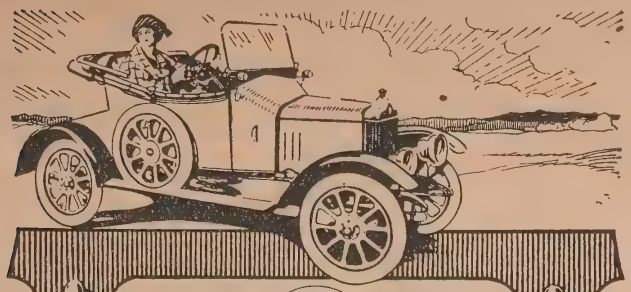
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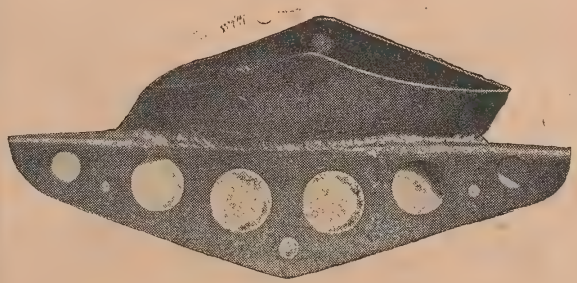
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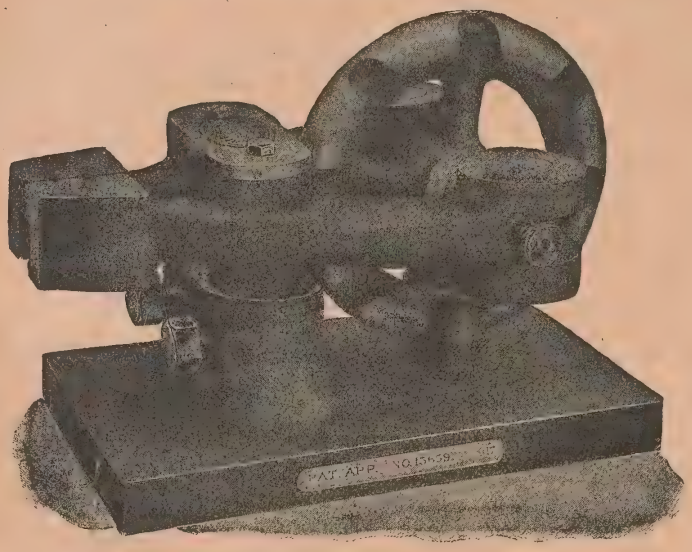
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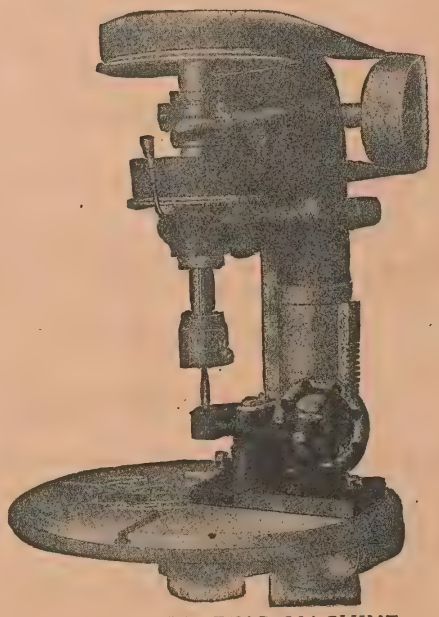


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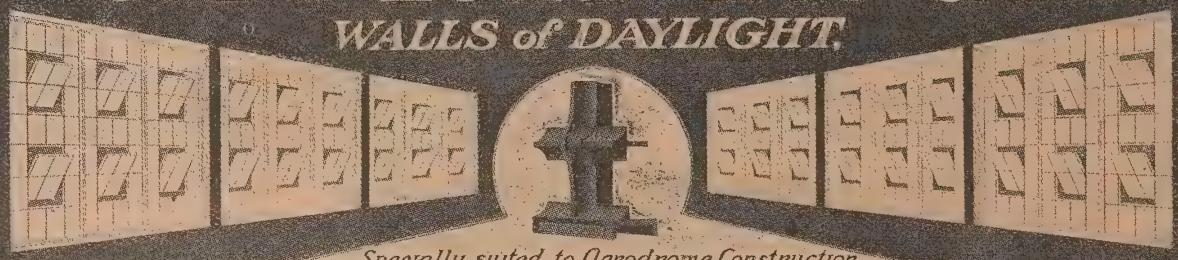
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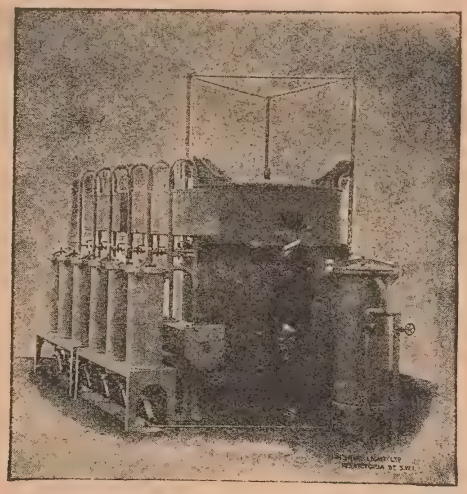
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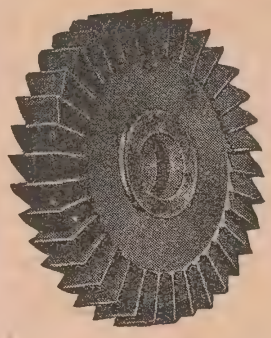
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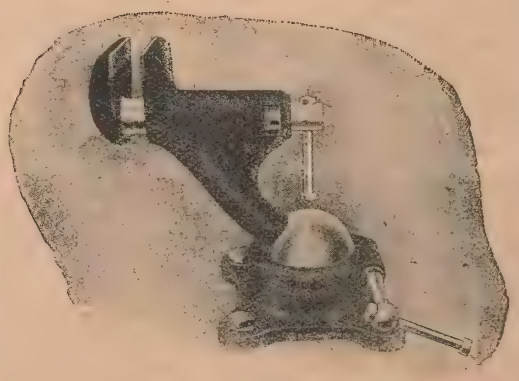
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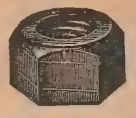


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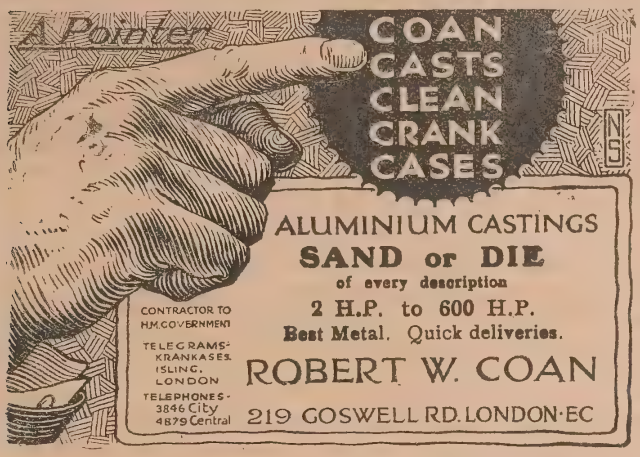
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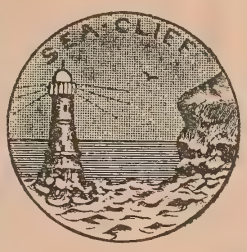
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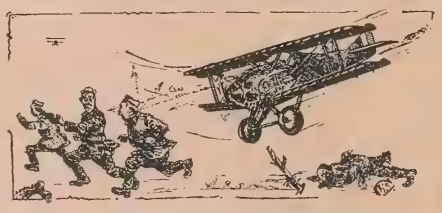
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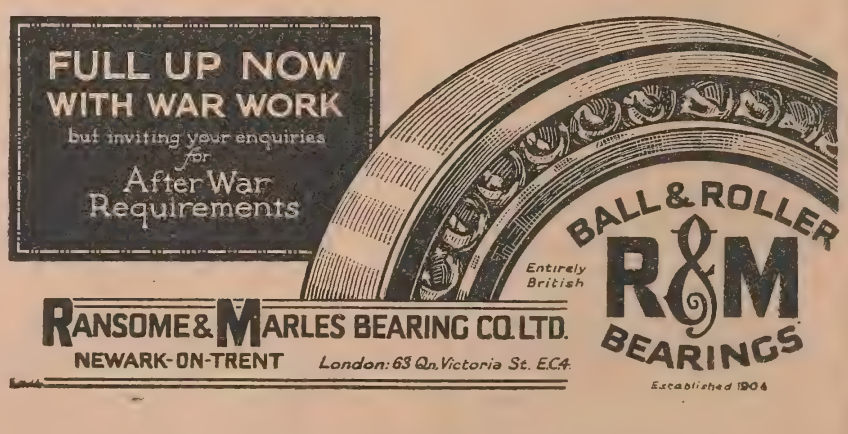
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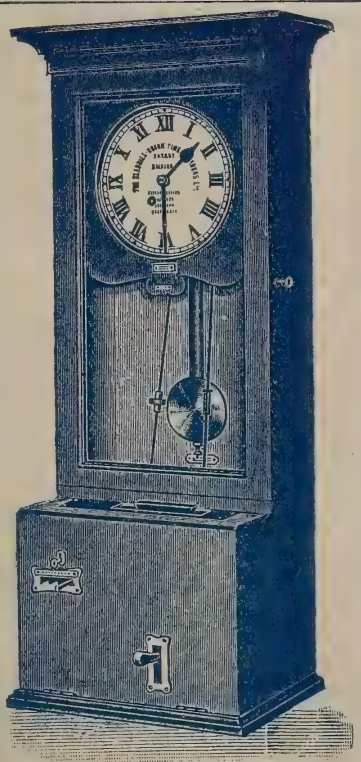
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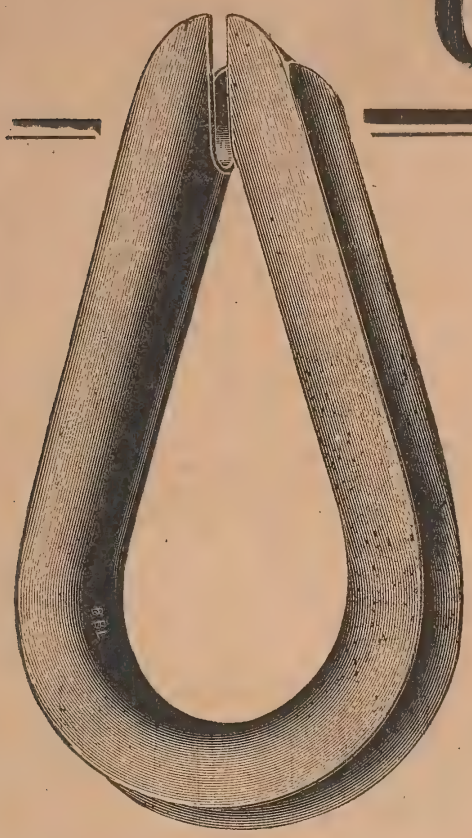
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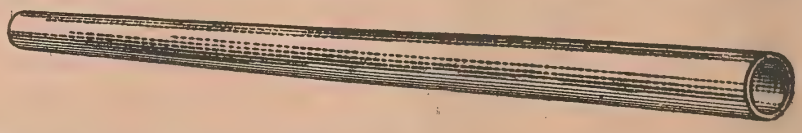
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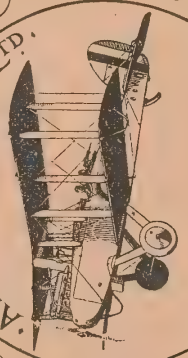
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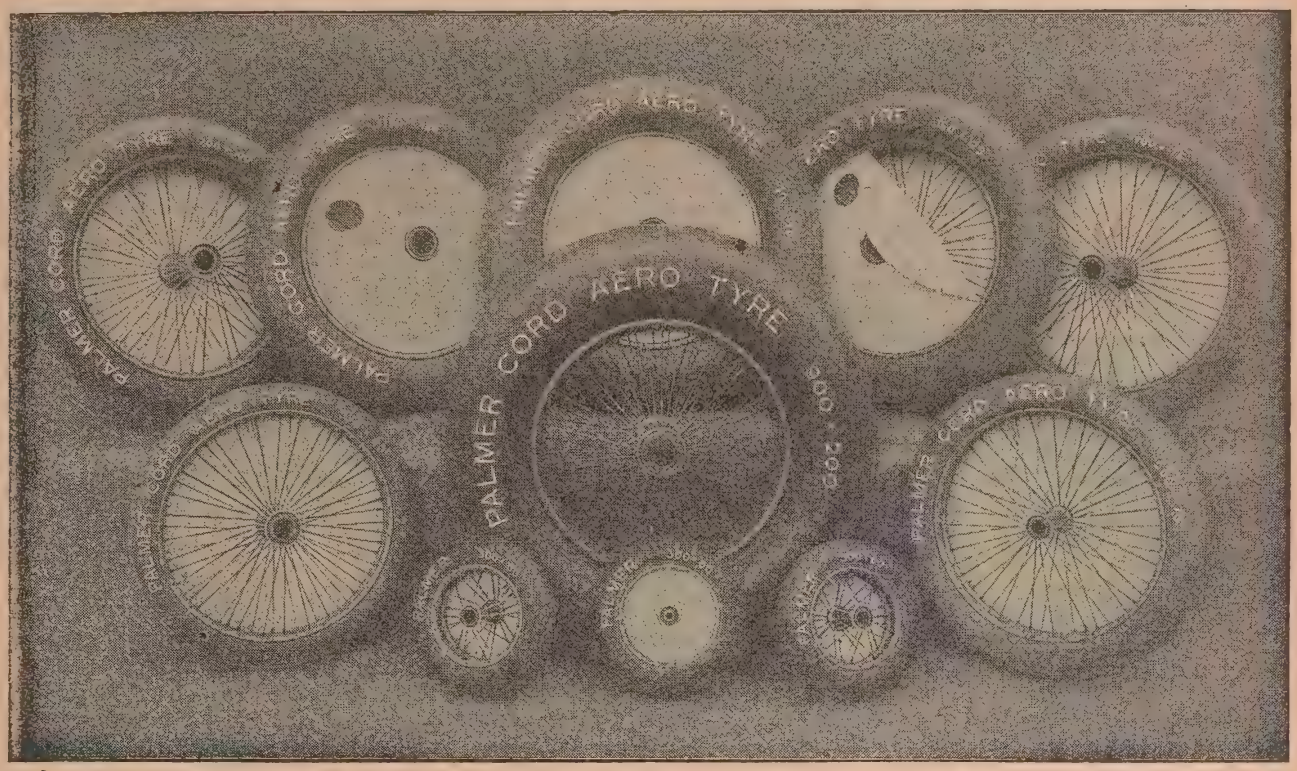
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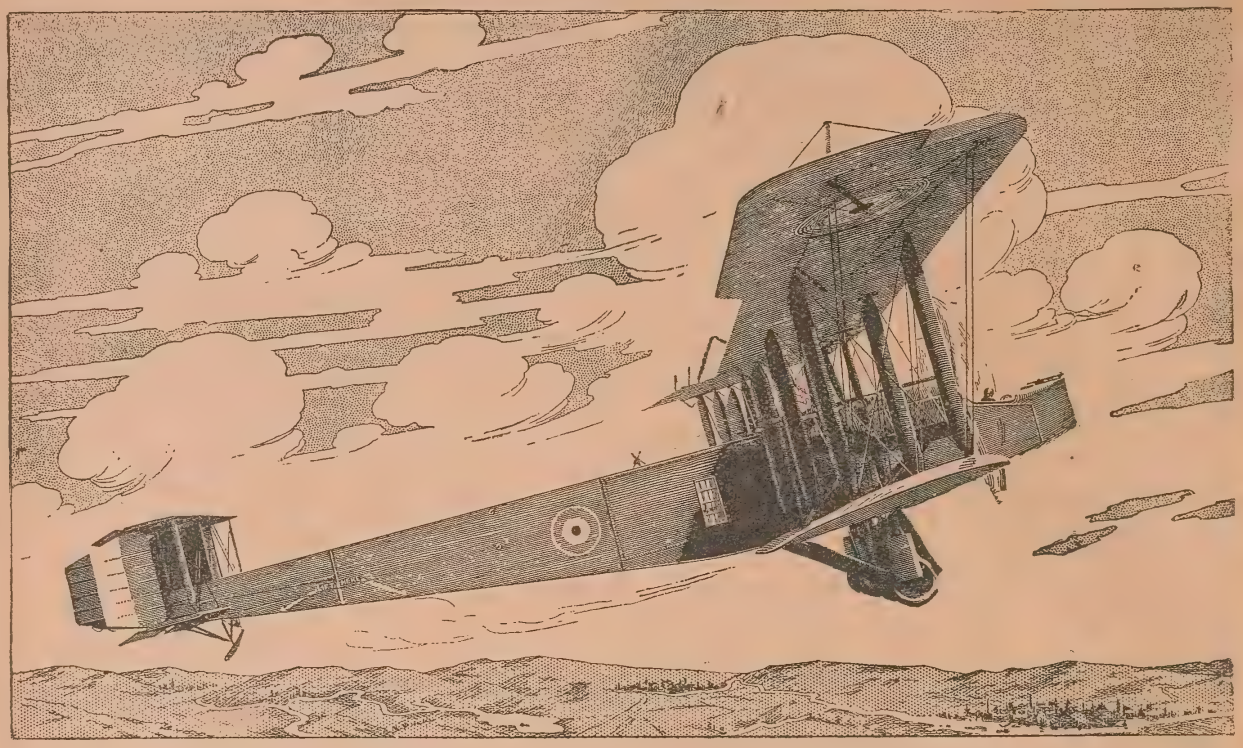
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ON A SEMI-OFFICIAL COMMUNICATOR.

For some months past, at frequent intervals, someone or other who is evidently connected in some way with the Air Ministry as such, or at any rate with the Royal Air Force, has been in the habit of ladling out to the Press lengthy communiqués of a more or less descriptive nature on the doings of the Royal Air Force, which communiqués the news-sheets have as a rule loyally reproduced whole or in part, despite the shortage of paper. One has no knowledge of the individual nor of the department whence these documents have emanated, so one is entirely without prejudice when one describes them as being on a level with the feeblest productions of that feeble institution, the now happily deceasing Ministry of Information, or with the flat, stale, and unprofitable (from a literary point of view) issues of Messrs. Wing Adjutant, Middleton, and Winchester.

They are doubtless well meant. Probably the writer intended to stir up popular enthusiasm for our "heroic airmen" or our "bold bird-boys," but in point of fact his lucubrations are about as inspiring as controlled whisky or Government ale, and about as convincing as a policeman's evidence or one of Mr. George's speeches. It is one of the peculiarities of aeronautical writings that they are only convincing when they are funny. "Contact" and "Spin" are real and alive. The rest are pure piffle, and certainly the most piffulent is the writer of these official or semi-official descriptive articles. To parody a *bon mot* of that eminent humorist and musical critic, Mr. Ernest Newman, the only air stories that we can take seriously are the comic stories: the serious stories are too comical for us.

However, so long as the official communications remained merely imbecile, one had no quarrel with them. They were entirely a matter between the writer and his Maker—and the editors who, in the American phrase, fell for them. But when the same inept hand begins spreading utterly misleading information it is time for someone to expose his ineptitude. One gives him credit for being merely a fool and not a knave, but as far more harm is done in this world by a few well-meaning fools than by all the genuine knaves, it is really more important to arrest the fool's progress than the knave's—which is why imbeciles are imprisoned for life in lunatic asylums, though they have done no crime, when murderers who escape hanging are released after a few years.

Therefore let us get to work on the semi-official communicator. Here goes for a start. Admire his headlines.

THE ROYAL AIR FORCE, WEEK BY WEEK.

BRITAIN'S FIGHTING AEROPLANES.

TECHNICAL TRIUMPHS OF THE AIR WAR.

WHY GERMANY FAILED IN THE AIR.

"For the first time during the war, it is possible to disclose official details of the remarkable fighting aircraft which enabled the Royal Air Force to play so notable and conclusive a part in the aerial defeat of Germany and her Allies."

One would imagine from this gambit that he was going to tell us something of real interest, but, as usual, he starts by misleading his readers. It has been *possible* to disclose official details at any time, if officially approved, but it has never been done. Least of all is it done in the stuff which follows, for there are hardly any details, and most of his figures are inaccurate. But you notice how he sets about "creating an atmosphere" with which to gas the simple-minded.

"It is well known that during the final stages of the war Great Britain has been turning out large numbers of the fastest and most powerfully armed aircraft in the world. Indeed, the collapse of Germany in the air, which was so noticeable a feature of the last phase of the operations, was largely due to the fact that, not only was she confronted with an Air Force immensely superior to her own in all those personal qualities which constitute fighting morale, but that she was at last definitely outclassed in the speed, climb, and fighting efficiency of the super-aircraft which British inventive genius brought into the field."

His first sentence is true, with the qualifying statement that the fastest and best fighting machines never got to the front because they have been kept hanging about in this country for a year or more, owing either to the knavery or to the gross incompetence of the technical experts.

The second sentence is also true, subject to the qualification that the "super-aircraft which British inventive genius brought into the field" were all over a year old in pattern—with one solitary exception—and some were four years old. Which state of affairs is a disgrace to the people who are responsible for the equipment of the active-service pilots.

The fact that our antiquated designs were—thanks to the extreme gallantry of the crews, and to superior numbers—able to defeat the German aviators is no excuse for the failure of our supply and equipment people. One might as reasonably announce with pride that the Army Ordnance Department had in 1918 supplied our troops on the North-West Frontier of India with Martini rifles—though neglecting to supply Lee-Enfields and machine-guns—and then advertise the superiority of the Martini over the native Jezail. That, of course, is purely an illustration of an argument, for the Army—barring the amateurs who made a mess of the Tank business—does not do such things. Unfortunately the Air Force does, as the semi-official communicator shows us.

"Roughly, the machines employed by the Royal Air Force upon the fighting fronts may be divided into three groups:—

"1. RECONNAISSANCE MACHINES, used for contact patrol work over the lines, the direction of artillery fire, photography, and general strategical reconnaissance.

"2. HEAVY BOMBERS, capable of travelling long distances without escort, and carrying heavy loads of bombs in addition to defensive armaments.

"3. FAST FIGHTING SCOUTS, possessing exceptional climbing powers, heavily armed, and capable of manœuvring at a very high rate of speed."

One has but little quarrel with these statements,

though the division is as rough as the parting on a bear's head. The most obvious misleading statement is that "heavy bombers" are "capable of travelling long distances without escort." It is true that they do so, but no indication is given as to the percentage of casualties. The statement implies that escorts are unnecessary. If they are unnecessary, then why, further on, does the writer state that the Independent Force, R.A.F., includes Camels? The Sopwith Camel is essentially a fighting machine which could only be used by the I.F. for escort duty. It is true, of course, that Camels are used by the Army as low bombers.

As regards the "heavily armed" scouts, one would like to know what the writer means by this phrase: "The Germans were the first to use twin machine-guns, and one has yet to see more than one type of scout machine carrying more than two." The French used "canons," as they called them, on scouts, as well as on the old Voisin biplanes, three years and more ago. Yet one has heard nothing of anything bigger than an ordinary machine-gun being used on our own scouts, though all the world knows that the R.N.A.S. was experimenting with a 1½-pounder quick-firer before the war. Can the authorities now make it "possible to disclose official details" of any developments in this direction? Personally, one is under the impression that this branch of aerial warfare has been grossly mishandled by an incompetent department.

Reverting to "reconnaissance machines used for contact patrol over the lines," one seems to have heard, at any time since contact patrols were invented, that the machines used for this purpose were "duds" which had outlived their usefulness for any other job, or single-seaters which had been ordered in quantities and did not come up to expectations as fighters.

Reconnaissance Machines.

"The earliest type of British reconnaissance machine was the now famous B.E.2c, designed and produced by the Royal Aircraft Factory at Farnborough. The design was completed just prior to the outbreak of war, a fact which facilitated immediate production for the use of the Expeditionary Force. As far as possible, speed, climb and manœuvring ability were combined, although compared with modern types it was a relatively slow machine, making only 50 to 60 miles an hour with the 80 h.p. engine with which it was originally fitted."

Here we have a whole series of misleading statements, due apparently to sheer ignorance of the history of aviation and of the R.F.C. In the first place the earliest reconnaissance machines were any old things that happened. Blériots and Farmans predominated. There were some B.E.2as, which were followed by B.E.2bs, but the B.E.2c did not come into general use till well on in 1915, and when it did arrive it turned out to be the curse of the R.F.C.

So far from "facilitating immediate production for the use of the Expeditionary Force," the unnecessary complication of the design, the hopeless inaccuracy of the drawings, and the utter unsuitability of the machine for war work, minimised the production of aeroplanes when they were most urgently needed, and provided ultimately a vast number of machines which were a constant danger to those whose high sense of duty forced them to use them.

The B.E.2c was pushed and advertised and ordered by the official gang who were responsible for it, and far better machines were held back in order to make way for it. For example, the smaller Armstrong-Whitworth biplane, designed by Mr. Koolhoven in 1914, had a far higher performance, was equally stable, was harder to smash in landing, and was much easier to build. The Sopwith "1½ Strutter," which appeared in June of 1915, beat the B.E.2c on all points, and yet the Authorities went on building 2cs in 1916. And even the 80-h.p. Avro of 1913 had a better performance than the 2c of 1915. The value of the Avro is proved by the fact that it is now used in thousands for school work and the B.E.2c is dead.

Therefore the less any semi-official communicator says about the 2c the better for the reputations of those who were responsible for it. But even here the writer of the document quoted seems unable to be accurate. Bad as was the 2c, its speed was never as low as "50 to 60 miles an hour." It generally did 66, and when lightly loaded could do 70 or more. Also, it never had an 80-h.p. engine. At first it had a 70-h.p. Renault, and thereafter the 90-h.p. R.A.F. of infamous memory, an engine which probably cost us more in casualties than did the skill of the German aviators—that is to say, when it did not actually let its crew down in Hunland it behaved so badly that the machine was a "sitter" for every German Archie or chaser for miles round.

"This was followed by the Armstrong-Whitworth F.K.8, fitted with 160 h.p. Beardmore engine, which made an average speed of 88 miles an hour and could climb to 10,000 feet in about 27 minutes."

Of this statement one need only say that it is fairly true, and is an indictment of those responsible for the equipment of the R.F.C. The "Big Ack W.," as it is familiarly called, was designed by Mr. Koolhoven in 1915 as a reply to the early R.Es.—which were hopeless wash-outs. The bulk of the 120-h.p. (later the 160-h.p.) Beardmore engines were allocated to the Royal Aircraft Factory for their big pusher biplanes, the F.Es., which were failures with the Renault and R.A.F. engines for which they were designed. Being official designs, they had to "make good," so the only available high-powered engines were taken away from better machines and better designers and were sent to save the reputations of the official people.

This was a typical bureaucratic dodge, and it is worthy of special note because some very similar trick may be played in connection with official civilian flying, if the R.A.F. becomes a cross between the Post Office Department and a State Railway.

However, when the supply of 160-Beardmores increased, a number were allocated to Armstrong-Whitworths, and the machines were so successful that they were still in use at the end of the war. It is necessary to point out, however, that the speed of the first machines was nearer 110 than 100 miles an hour, and that they only lost their performance when the designs were altered in detail in accordance with official instructions.

"Towards the end of 1916 an immense forward stride was taken by the production at the Royal Aircraft Factory of the R.E.8, with a 12-cylinder R.A.F. engine. This engine has done the bulk of the artillery observation work in France, directing all big gun fire and barrage work. At 10,000 feet it has a speed of 92 miles an hour, and can climb to that height in 11 minutes. It is fitted with camera and wireless equipment, and takes photographs of every shoot."

This paragraph is a piece of sheer effrontery, or else evidence of blazing ignorance. The R.E.8 of 1916 was the most dire contraption which ever staggered into the air. The design in general and in detail was an offence before Heaven. The number of people killed and burnt by it in Great Britain will never be known, but the R.F.C. regarded a flight in an R.E.8 at home as far more dangerous than a flight over the enemy's lines in a real aeroplane. It was only controllable by a very skilful and cautious pilot, and if it had any kind of a crash it almost always caught fire.

However, it was an official design of the Royal Aircraft Factory, so it had to be pushed. It was ordered in vast quantities, and was generally made by people who knew nothing about aeroplanes and who were content to make anything for which officialdom gave them orders. Even if the machines never flew on active service,

they brought in war profits, and that, presumably, sufficed. Like all R.A.F. designs, the R.E.8 was wasteful of labour and material, and therefore decreased output, but that did not matter so long as official designs were made.

It was the only thing available in quantities, and the Army's air work had to be done, so the R.F.C. Generals in France gallantly flew R.E.8s themselves in order to give confidence to the poor brave lads who had to use the things over the enemy's lines. After many months, and at vast expense in labour, time, and lives, the R.E.8 was altered and altered till it became a decent flying machine, though it has never to this day even remotely resembled an aeroplane. And so we find it, with its miserable 130-h.p. or so, still in use two years after the last of its type ought to have been decently burnt and buried. One is quite aware that gallant and skilful R.E. crews kill Huns, but that is the more to their credit, and the more to the discredit of the incompetent officials who made it necessary for them to do so.

As a final touch one may safely say that no R.E.8 with a war load ever reached 10,000 in 20 minutes, let alone 11 minutes. Something over half an hour is nearer the time after a very short exposure in the field.

"An even bigger advance was marked by the introduction of the "Bristol Fighter," a long-distance fighting reconnaissance machine, capable of travelling at 113 miles an hour at 10,000 feet, and climbing to that height in 11 minutes. Had the war continued, the "Bristol Fighter" would have entirely replaced the R.E.8 for long-distance artillery work."

Here we find a reasonable approximation to the truth. The Bristol Fighter, designed by Captain Frank Barnwell, one of the most brilliant and soundest designers of to-day, and built by the British and Colonial Aeroplane Co., Ltd., is undoubtedly one of the finest machines in the world. Though a big two-seater, it can, owing to its beautiful balance, perform any trick possible to the smallest single-seater, and can do it safely, owing to its magnificent construction.

But—there is always a but in official affairs—though it first appeared in 1916, and ought to have abolished the R.E.8 by the end of 1917, the Bristol Fighter has always been held back by the absence of suitable engines. Consequently it has never been made in proper quantities.

Some day it will be possible to deal faithfully with the crimes—there is no other adequate word—of the people who have ruined our engine supplies by spoiling good engines and ordering vast quantities of things which are not fit to drive a motor street-sweeper. All one can say at the moment is that if our engine supplies had been handled by anybody with the ability of any ordinary suburban grocer, the Bristol Fighter would to-day be one of the star fighting machines of the world, and none would have been so foolish as to think of using it for mere artillery observation.

British Bombers.

"Aerial bombing was first undertaken in France by the Avro, a machine of moderate speed fitted with an 80-h.p. Gnôme engine. The observer's seat was used as a receptacle for the bombs, which were merely thrown overboard without the aid of the scientific bombing sights and elaborate bomb-dropping gear which have since contributed so largely to the wonderful accurate shooting during the raids upon Germany."

Once more we find that cheerful ignorance of history which is the mark of our official communicator. "Aerial bombing was first undertaken in France" by any old thing available. Voisins, Blériots, and Morane "Parasols" were among the earliest. The first organised bomb raids into Germany, those organised by Squadron Commander Louis Gerrard, R.N.A.S. (Major, R.M.L.I.), and carried out by Flight Commander Spenser Grey, and Flight Lieutenants Reginald Marix and Collet, R.N.A.S., on Cologne and Düsseldorf, were made on Sopwiths, and



Official Photograph

DURING THE LAST DAYS.—A group of officers of the I.A.F. and a bombing machine. The variety of uniforms is noteworthy.

that on Friedrichshafen, organised by Lieutenant N. Pemberton-Billing, R.N.V.R., and carried out by Squadron Commander E. Featherstone Briggs, and Flight Commanders John Babington and Sippe, R.N.A.S., was made on Avros. Possibly the writer had the last-mentioned in mind, but that was in November, 1914, and bombing was quite common then. And, anyhow, the Avro was not "a machine of moderate speed," for it was by a long way the fastest two-seater of its day, miles faster than the B.E.2c, its speed being over 80 miles an hour with an 80-h.p. Gnôme.

"The first British machine specifically constructed for bombing purposes was the Short, a modified seaplane, fitted with a 230 h.p. engine, and carrying four 112 lb. bombs under each wing.

"This type, which did most useful work in France, was followed by the Sopwith 1½ Strutter, and later by the highly improved D.H.4 and D.H.9 machines.

"The D.H.4 machine was originally designed as a fighter, but its trials disclosed such excellent lifting powers that it was converted to bombing purposes. It is capable of climbing to 10,000 feet in 9 minutes, and has an endurance of 3¾ hours.

"The D.H.4 and D.H.9 machines have been fitted with Rolls-Royce, B.H.P., and latterly with Liberty engines."

Most of this paragraph is sheer unadulterated nonsense. The twin-engined Dyott of 1915 and the contemporary twin-engined Fairey "folder" were "specifically constructed for bombing" long before the technical imbeciles of the R.N.A.S. thought about mangling a perfectly good seaplane and turning it into a perfectly hopeless bomber. The poor old mangled Short never "did most useful work in France," though that was not the fault of the Short Brothers, and the type was washed out after a few trips had been made over the lines on it. The machines, however, were delivered in quantities and burned without being used.

The Naval "experts" had washed out the Dyott and the Fairey long before that, and so the "first British machine specifically constructed for bombing" which ever came into regular use was the Handley-Page, which, as usual, came into regular use about a year and a half or two years after its energetic designer-constructor had put up wonderful demonstrations of its capabilities and after various young and intelligent officers had got themselves severely disliked by trying to drum its uses into the thick heads of fossilised seniors.

The Sopwith 1½-strutter bomber was the ordinary two-seater fighter faked up to carry bombs instead of a passenger.

The D.H.4 and 9a, the products of that very excellent designer, Captain Geoffrey de Havilland, at the Aircraft Mfg. Co., Ltd., may be placed among the brilliant successes of the war. As long-distance daylight bombers they have been easily first. But—again that but—the D.Hs. also have suffered from the ineptitude of the Engine Department.

The Germans know better than do any of us how many D.Hs. they have captured through engine failure. The engines which have failed, the B.H.Ps., may not be to blame. Possibly the Engine Department has put them into production before all "teething troubles" have been eliminated, possibly insufficient attention has been given to instructing mechanics in their care and tuning. But the fact remains that the people who come home say that they have lost more machines from engine failure than from enemy action. The B.H.P. is an extremely pretty engine, and one gathers that it gives excellent results under all possible tests. Therefore one feels that the makers of the B.H.P. have a legitimate grievance against the people in charge of engine supplies for allowing their engine to be used under conditions which prevent it from upholding the high reputation of its makers.

"Finally, the great Handley Page machines were devised for the bombing of Germany. The first quantity production was begun in August, 1917, and the performance of the machine has justified the highest expectations. It is capable of carrying 2,000 lbs. weight of bombs in the fuselage, or 1,500 lbs. to suspended externally.

"The machines used by the R.A.F. Independent Force in the the bombing of Germany. The first quantity production was and Sopwith Camel."

"Finally, the great Handley-Page machines" were not devised for the bombing of Germany. They were devised for the bombing of anything within their reach. They were first used by the R.N.A.S. against German coastal positions in Belgium, and they were used there for months with very great success and with astoundingly low percentage of casualties—thanks to the tactical skill and organising ability of certain comparatively junior R.N.A.S. officers—before it occurred to any of the people high up to use them against Germany itself. Even then their attempts were lamentable until General Trenchard organised the Independent Force and ran it as a military force should be run.

It is interesting to learn, on this semi-official authority, that "the first quantity production (of the Handley-Page) was begun in August, 1917." It was in the Summer of 1916 that Mr. Clifford Prodger took 21 passengers aloft for an hour or so, and the machine was, if one mistakes not, flying at Christmas, 1915. It is a fine example of official dilatoriness.

When one thinks of all the air work that might have been done if only there had been someone capable of cutting out that constant waste of a year which occurs between the appearance of a new type and its being put into production, one could weep—but that the similarity of the whole official management of aviation to that screaming farce, "A Pantomime Rehearsal," forces one to laugh.

Fighting Scouts.

"Not until the middle of 1915 were production machines armed with standard equipment. Two of the earliest types were the F.E.2b and the Vickers Fighter. Both had an open cockpit, and were equipped with Lewis or Vickers' machine-guns.

"The year 1916 witnessed the introduction of the fixed machine-gun firing through the propeller and fitted with the ingenious Constantinesco interrupter gear."

There again is a horrid confession. One remembers a young officer of the R.F.C. Special Reserve, named T. O'B. Hubbard, experimenting with a machine-gun on a Henry Farman in 1913, and one seems to remember Mr. de Havilland doing likewise on the first F.E. in 1912, and there were heaps of R.N.A.S. experiments in 1914. Yet it was "the middle of 1915"—after nearly a year of war—before "production machines were armed with standard equipment." At this rate one supposes that it will be the middle of 1920 or 1921 before our official postal aeroplanes are equipped with standard mail-bags.

Incidentally the Vickers Fighter, commonly known as the "gun 'bus," was equipped with a machine-gun some months before the war, thanks to the combined foresight of Captain (now Major) H. F. Wood and of the late Mr. Harold Barnwell. Yet this machine was not really put into production till well on in 1915. And, anyhow, she was months earlier than the F.E.2b, and had a better performance in many ways.

Our authority need not have advertised the fact that it was 1916 before the fixed machine-gun with an interrupter gear was introduced. This paper suggested somewhere in 1912 that experiments should be carried out in such a gear, but—naturally—nothing was done about it. And the Germans had quite a good gear-driven interrupter in 1915, when the Fokker monoplanes were shooting down B.E.2cs in heaps, partly owing to superior performance, and partly because none of the official people had the sense to copy the small Armstrong-Whitworth and put the passenger and a gun behind to protect the tail.

"Other types followed, rapidly leading up to the S.E.5a, and,

. The .

Sopwith Aviation Co.

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last, the Sopwith Dolphin, the best and latest British fighting scout in the field.

Both these types were in use at the termination of hostilities. Some idea of the power of these modern aircraft can be gained from the fact that the Dolphin travels at 128 miles an hour at 10,000 feet, and climbs to that height in 8¼ minutes. It lands at upwards of 55 miles per hour."

The semi-official communicator seems to have become tired hereabouts, for he neglects entirely some of the most interesting historical machines. Apart from omitting that excellent fighter, the D.H.2, he does not say that all our "Fighting Scouts," as he is pleased to call them, originate from the Sopwith Tabloid of 1913, and from Mr. Frank Barnwell's reply to it, the Bristol "Bullet," the line being the Tabloid, the Bullet, the Sopwith Pup, the Baby Martinsyde, the Sopwith Camel and the Snipe.

The S.E.5a is nearly two years old, and ought to have been superseded nearly a year ago. It is utterly outclassed by at least one machine of Martinsyde design, which has been hanging round in this country for over a year, and one can only ascribe the neglect of the superior machine to professional jealousy and official pull. The fact that a specially faked S.E. like the late Major McCudden's was more than equal to the Hun's best is no excuse for neglecting to provide our active-service aviators with a better machine.

The Dolphin is certainly a fine machine, but it, like others, has been prevented from doing its best by the fact that the Engine Department has dished out to it various kinds of engines which have given continual trouble. The particular engines are not mentioned in the document quoted, but our active-service people will recognise the truth of the statement. The best engines in this class have been carefully cornered for the S.Es.

The writer of the document has vague ideas of speed, and his figures are probably hopelessly inaccurate, for 128 m.p.hr. at 10,000 ft. is nothing about which to get excited in these days, and 55 m.p.hr.—whether "upwards of" means slightly above or slightly below—is an unnecessarily high landing speed. Therefore it seems that his apologies are due to the Sopwith Co. as well as to some other firms.

"The following table shows the performances of the leading British types—(at lower altitudes the machines will, of course, develop higher speeds):—

Machine.	Speed at 10,000 ft.	Time required to climb 10 000 ft.	Continuous flight capacity.
F.E.2B	76	40 minutes.	3½ hours.
Vickers' Fighter	76	40 ,,	3½ ,,
Sopwith 1½ Strutter	103	19 ,,	— ,,
Bristol Scout	111	10 ,,	1¾ ,,
A.W.	88	27 ,,	3 ,,
Sopwith Camel	118	10 ,,	2½ ,,
D.H.4	120	11 ,,	4 ,,
D.H.9A	120	11 ,,	6 ,,
Bristol Fighter	113	11 ,,	3 ,,
S.E.5A	126	10 ,,	3 ,,
Dolphin	128	8¼ ,,	1¾ ,,

This table is merely comic, and why the machines named have been specially selected or why they are in the order shown does not in the least appear. Still, there is some amusing stuff in it. One sees, for example, that the 160-h.p. F.E.2B had only the same performance as the old Vickers "gun 'bus" with its 100-h.p. Gnôme. And, as the funny Feeplane is still used largely for night-bombing (*vide* official photographs), one deduces that here at the end of 1918 we send our gallant aviators out on a machine which only does 76 miles per hour and spends 40 minutes out of its 3½ hours' duration in getting its height before it can cross the lines. If that were true, somebody ought to be shot for it.

One sees the Sopwith "1½ Strutter" dragged in again, so it seems worth while to revive the information given to the Air Inquiry Committee in 1916 that this machine was designed early in 1915, that it broke British Height Records in July, 1915, that the first order was given *by the French Army* on December 20th, 1915, and that it was not ordered in quantities by the R.F.C. till well on in 1916. Since then it has come out that *only two squadrons* of 1½ Strutters were available by the time the Battle of the Somme was being fought in September, 1916—something like 18 months after the machine was designed and made known to the Technical Experts. Has anybody been shot for that?

Why the little Bristol Scout appears is not explained. It was consistently "frozen out" from going on active service by the "experts" at home, and one has no recollection of any squadron equipped entirely with "Bullets," though there may have been some odd samples in France.

"It is impossible to convey an adequate idea of the immense mechanical difficulties which have had to be overcome in the evolution of these types, with their countless accessories, under pressure of an unprecedented man-power crisis, when demands of inconceivable magnitude and urgency were being made upon every possible source of British industrial activity.

"The call for new and increasingly powerful machines (in ever-increasing numbers) came just at the time when Britain's manufacturing capacity was being taxed to the uttermost to increase the shipbuilding output, to supply the urgent needs of the British Admiralty, and to produce the immense quantities of guns, shells, and other munitions required by our rapidly growing armies at the Front, and by many of our Allies.

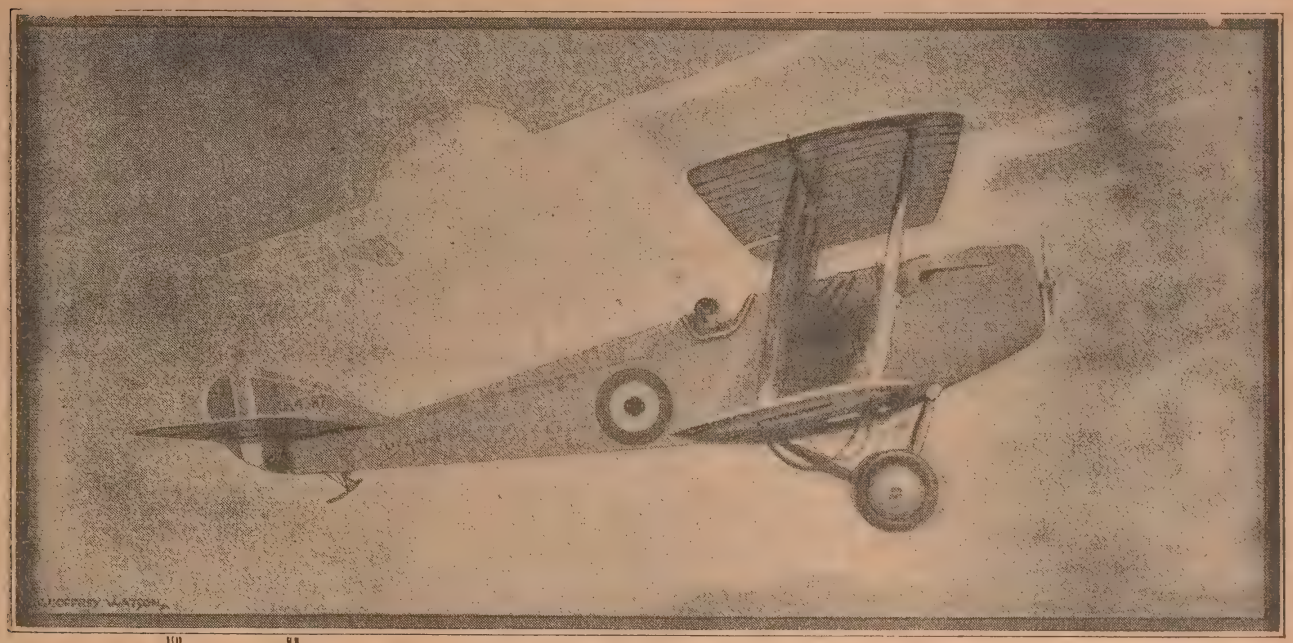
The final paragraph is eminently worthy of an official flap-doodler. The mechanical difficulties which have had to be overcome have been the least of all the difficulties of our aircraft designers. Most of our best machines have been designed in a few days and built in a few weeks, after which it has taken months and months of hard work and wearying intrigue of all sorts to get the official people to admit that the thing was worth ordering.

Then have followed more months of wrestling with ignorant or incompetent technical experts, and with officials who were prejudiced against the particular machine and, or, its designer or manufacturer, or were interested in some other make, or expected to be squared in some way or other. And then there had been all the further delays of official tests carried out by self-conceited youths under the instructions of unpractical scientists.

Time, labour, material, nerves, and patience have been squandered by the gross incapacity of the technical people from the very beginning to the very last day of the war, and it is the duty of those who are truly concerned for the future progress of aeronautics to see that all this damned and damnable official nonsense is stopped forthwith.

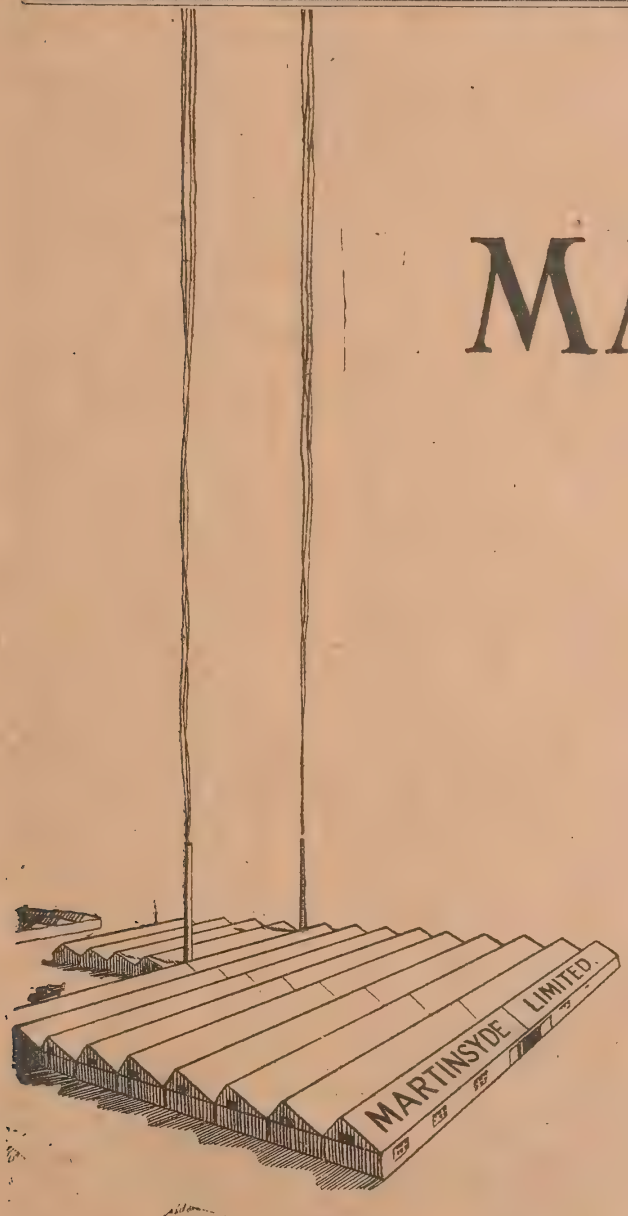
That is why one has dealt with this piffulent semi-official document at such length. The document and its author are together a portent that officialdom will not change in days of peace. The leopard cannot change his spots, nor can the onion lose its odour. Still less can the official lose his officiousness. If in the future aviation is to become a safe and economical method of transport, the whole Aircraft Industry and the present-day active-service pilots, who will do the flying in peace-time, must get together and rid themselves of these trench-dodging or air-sick officials who sit in offices or wander round factories and hinder the work of the people who are the real producers of progress.

The S.E.A.C. ought to found a branch association for pilots who desire to fly for a living after the war. If such an association were properly run, the manufacturers and the pilots between them could very soon put an end to any nonsense on the part of ignorant officials in peace-time, when there is no further need for a pilot to risk his life on a dud official machine because the Army's air-work must be done, and because the Army's work is done in the King's Service.—C. G. G.





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". . . On Jan. 3rd, 1916, a motor-bus skidded into my Landaulette, which was fitted with Triplex glass. Although my car was very seriously damaged, not a piece of glass became detached from any of the five windows or wind screen, in spite of the fact that some were cracked all over. I was flung into the large window in front and stunned, but owing to the fact that it did not break I was not cut. I think it practically certain that if this window had been fitted with ordinary plate glass, I should have been fatally injured, as my head must then have been forced through the glass, with the likely result that the main arteries of my neck would have been severed."



From the Sea

". . . I enclose a pair of your goggles which I was wearing on —— when chasing a German seaplane which raided Dover. Owing to an engine failure I was compelled to make a forced landing in a barbed wire entanglement and hit my forehead upon a gun in so doing. I have little doubt that had I been wearing ordinary glasses my eye would have been cut."

Flt. Sub-Lt., R.N.



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". . . These Triplex goggles saved my life twice the same day. Upon the first occasion a small piece of 'Archie' struck the metal rim and passed along the glass, cracking and starring same. The machine fell 5,000 feet before I was able to get over and take control—my pilot was killed by the same shell. Upon crossing the line the machine burst into flames and I managed to side-slip, the machine crashing very badly. Once again the glasses saved my life. My head struck the top of the scarpe mounting, and had it not been for Triplex I should have been blinded and consequently killed. *I consider Triplex glasses the most indispensable part of an airman's kit. No one should fly without them. . . .*"

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CONTRACTORS TO H.M. GOVERNMENT.

PRAISE FROM THE AIR COUNCIL.

The following appeared in the daily papers of Nov 26th :—

Now that the final submission of Germany by the surrender of her fleet and submarines has taken place, the Air Council desire to express their gratitude to all ranks of the Royal Air Force for their share in the long series of operations which have ended so triumphantly for British arms, and their deep admiration for the valour and devotion to duty which has been shown through all vicissitudes.

In every theatre of war, by sea and by land, the assistance of units of the Royal Air Force has been a factor of ever-increasing importance in the operations of the Navy and Army; in these islands, also, the Home Defence Squadrons, under conditions of great difficulty and danger, have successfully met the menace of the enemy's attack by air on the civil population.

In recent months the work of the Independent Air Force has had moral and material effects, which have contributed powerfully to the disintegration of the enemy's capacity for resistance.

These results are due to the brilliant and inspiring leadership, Staff work, and organisation of the force, to the self-sacrifice and daring of pilots and observers, the unceasing care, under arduous conditions, of the ground *personnel*, the courage and devotion of flying instructors at home, and to the ingenuity and industry of all ranks in the equipment branches.

To all these, as well as to all the members of the Women's Royal Air Force, the Air Council tender the expression of their warmest admiration and gratitude in a spirit of thankfulness for the great results which, from small beginnings, have been achieved by the Air Service, and with the hope and the confidence, that, as aviation has shown itself to be so potent a factor in war, so it may also prove itself to be a beneficent influence in the peaceful development of civilisation.

THE R.N.A.S. AND RECENT NAVAL EVENTS.

On Nov. 21st the daily papers all published articles from their various correspondents dealing with the surrender, on Nov. 20th, of the 20 German submarines to Rear-Admiral Sir Reginald Tyrwhitt's light forces from Harwich.

Several references were made to the R.N.A.S. in these reports, and all accounts agree that a large "stiff ship," numbered R26, a few non-rigid airships, and sundry flying-boats, or seaplanes—or both—the accounts do not agree on the last point—took part in the display.

The light cruiser, "Centaur," is reported to have been towing a kite balloon when she left harbour, and since, according to the same report, she was still towing it on her return, one presumes it was up all the time. It seems rather hard luck that certain mere mercantile ships, such as the "Leinster," for example, were not allowed the same privilege in the past.

Incidentally, the T.B.Ds. "Lurcher" and "Melampus," tenders to the submarine depôt ship, "Maidstone," played quite a big part in the proceedings.

On the occasion of the visit of the King and Queen and the Prince of Wales to the Grand Fleet at Rosyth, which took place on Nov. 20th, the correspondent of the "Times" sees fit to discourse upon "airship vessels." Presumably he has mistaken the kite-balloons for airships, or does he argue that all aircraft are "ships," since all seacraft are called ships—but are not?

Mention is made of "Furious" as a "hush-hush" seaplane carrier, but beyond writing of her "vast platforms," from which aircraft ascend and on which they alight, the "Evening Standard" correspondent gives no details. He says :—

"One of the signs of the change which air warfare has brought is the aeroplane carried by each of the British Dreadnoughts for fire control, reconnaissance, and attack on enemy aircraft. These wicked-looking 'camel' machines drove the Zeppelins from the water where they ventured to show themselves long after it became too perilous for them to fly over British soil. The daring of the 'camel' pilots who handle these aeroplanes is legendary."

On Nov. 21st certain warships of the German Imperial Navy surrendered to the squadrons from the Grand Fleet under the command of Admiral of the Fleet, Sir David Beatty. Among the British ships participating in the proceedings were the seaplane ship, "Furious" and the light cruiser, "Fearless." The majority of the other ships carried aircraft.

The light cruiser, "Cardiff," who directed the movements of the surrendering warships, towed a kite-balloon, and various British Naval airships and seaplanes—of unstated types—flew over the combined fleets.

It is left to Mr. Harold Begbie, in the "Daily Chronicle," to give a few particulars of H.M.S. "Furious." In a description of a night spent on board he says :—

"Anyone walking on the vast unguarded deck of H.M.S. 'Furious,' which is like walking on the roof of the world, might have seen, as he looked deep down into the lift which brings aeroplanes up from below, a bluejacket playing rag-time on a piano, and couples of bluejackets hugging each other in a dance.

"In this manner one of the strangest ships in the Grand Fleet, a ship which runs to hundreds of yards in length and can carry comfortably over 20 aeroplanes, and on whose deck that gallant fellow Edwin Dunning landed the first aeroplane ever to come down in this fashion—thus, I say, did 'Furious' celebrate one of the greatest nights in British history."

One was under the impression that the late Mr. Eugene Ely, somewhere back in 1910, flew from the shore and landed on the deck of U.S.S. "Pennsylvania" (later re-named "Pittsburg").—S. F. B.

A FAMOUS SHIP.

On Nov. 22nd the daily Press were permitted to state that the Cunard liner, the "Campania," was recently sunk in the Firth of Forth. All on board were saved. During the gale she broke from her moorings and came into collision with a battleship, and went down before she could be beached.

The "Campania," says the "Liverpool Courier," had for some time past been used as a seaplane carrying ship, and for this purpose was fitted up by Caminel, Laird, an operation which took five months to complete. Her funnels were placed abreast, and her deck laid flat, and altogether she was completely transformed from the thing of beauty she had previously been.

The "Campania" was a steel twin-screw vessel of 12,950 tons, built and engined by Fairfield and Co., of Glasgow, in 1893. She was 601 ft. long, 65 ft. 2 ins. in breadth, with a depth of 37 ft. 8 ins. Her indicated horse-power was 30,000, giving her a speed of 22 knots. She was most luxuriously fitted throughout, and at the time of her launch was considered, not without reason, as the last word in Transatlantic travel. The lost liner, together with her sister ship, the "Lucania," made many splendid passages across the Atlantic, her best figures westward being 5 days 9 hours 6 mins., and eastward 5 days 9 hours 18 mins.

The "Campania" represented the Cunard Line at the great Naval Review held at Spithead in June, 1897, to commemorate Queen Victoria's Diamond Jubilee. The extreme age of the ship probably accounts for the legend current in the R.N.A.S. that she was held together chiefly by the innumerable coats of paint with which she was covered.

In the battle of Jutland, when H.M.S. "Warrior" was hard pressed by a German battleship, the "Campania" interposed her hull, made fast a hawser to the British cruiser, and towed her for ten hours.

The "Warrior" subsequently sank, but it was claimed that the "Campania" was the means of saving the crew, only one of whom was officially reported as drowned.

The "Campania's" name has been made still more historic by the fact that a type of seaplane was specially designed by Mr. C. R. Fairey to operate from this ship, and this type was thereafter known as the "Campania" type.

THE NEXT AERO SHOW.

A circular issued by the Society of Motor Manufacturers and Traders, Ltd., on Nov. 22nd, contains the following paragraph :

"The series of International Aero Exhibitions, which was commenced by the Society in 1909, will be forthwith resumed.

"The pioneer work of the Society in this respect proved of great national value in 1914. It is confidently anticipated there will now not be that lack of public interest in aircraft which caused those exhibitions to prove a serious financial loss which was only borne in view of their national importance."

It will be interesting to see whether this assertion on the part of the motor trade meets with the approval of the Aircraft Industry and its representative body, the Society of British Aircraft Constructors. One is under the impression that it is the S.B.A.C.'s intention to hold its own aero-shows, and one is certainly of the opinion that such action on the part of the S.B.A.C. would be preferable to exhibiting under the auspices of the motor trade.

As may be seen the motor trade parades its own patriotism in bearing serious financial loss, but it omits to mention that the absence of the public from the aero shows was very largely due to the ludicrous way the said aero shows were advertised, and to the feeble attempts which were made to create public interest in the shows and in the exhibits thereat. So far all that one has learnt from the S.M.M.T. as regards aero exhibitions is how they ought not to be run, and one is pretty sure that the S.B.A.C. would make a very much better attempt at the job.

One utterly fails to see the great national value which the Society claims for what it is pleased to call its "pioneer work" in this respect. All one knows about the S.M.M.T. in connection with aviation is that a number of its members jumped into the Aircraft Industry early in the war when their motor businesses were threatened with extinction, and were content to reproduce any old aeroplane which the Technical Departments of the Flying Services were pleased to order.

One cannot recall any aeroplane of any value designed by any of the S.M.M.T. firms, and, though their reproductions of other people's designs have been quite good, one still fails to see why the pioneer firms of the Aircraft Industry should in any way consider themselves beholden to the motor trade, and still less does one see why the Society of Motor Manufacturers and Traders should be permitted to make vast show profits in the future out of exhibits designed by the Aircraft Industry.

THE CIVIL AERIAL TRANSPORT COMMITTEE.

[The following article, which purports to foreshadow the lines of the long-delayed report of the Civil Aerial Transport Committee, appeared in the "Times" newspaper on Nov. 25th. It is somewhat curious that the paper mentioned should be the first to publish alleged inside information of the report, in view of its proprietor, Lord Northcliffe, being the first chairman of the Committee. It is true that, so far as is stated, Lord Northcliffe only attended one meeting, but as titular chairman he would be entitled to inspect the mnutes of the other meetings, and therefore it would have seemed, to the ordinary individual, better form for his paper to have refrained from mentioning the subject till the full report was published.

However, the report, such as the "Times" alleges it to be, seems quite harmless, frequently silly, and in no case of any practical assistance to the problems of aviation. It seems well, however, to publish the article in full, with due acknowledgment to Lord Northcliffe's prescience, and to the perspicacity of the staff of the "Times."—C. G. G.]

It is understood that the report of the Civil Aerial Transport Committee, which was presented to the Air Council nearly six months ago, has now been presented to Parliament, but apparently it will not be printed until Parliament sits again in the New Year. To some extent, however, we are able to foreshadow the lines of the report.

The original reference was to consider:—

(1) The steps which should be taken with a view to the development and regulation after the war of aviation for civil and commercial purposes, from a domestic, an Imperial, and an international standpoint.

(2) The extent to which it will be possible to utilise for the above purpose the trained *personnel* of the aircraft which the conclusion of peace may leave surplus to the requirements of the Naval and Military Air Services of the United Kingdom and Oversea Dominions.

The Committee, which has undergone some changes since its appointment in May, last year, was a large and representative one. It included such experts as Sir Richard Glazebrook, F.R.S.; Mr. G. Holt Thomas, the builder of the de Havilland type of aeroplane; Mr. Claude Johnson, the managing director of Rolls-Royce (Limited); Mr. F. W. Lanchester; Mr. T. Sopwith, builder of the well-known fighting scouts; Lt.-Col. O'Gorman, Superintendent of the Royal Aircraft Factory from 1909 till 1916; Mr. J. D. Siddeley, engine builder; Maj.-Gen. Ruck, C.B., ex-chairman of the Aeronautical Society of Great Britain; Mr. H. G. Wells, Mr. Butler Aspinall, K.C., Mr. Balfour Browne, K.C., Brig.-Gen. Brancker, R.F.C., Capt. Vyvyan, R.N.A.S., Col. J. W. Pringle (Board of Trade), Sir Mackenzie Chalmers (Home Office), Sir Laurence Guillemard (Board of Customs and Excise), Mr. G. E. P. Murray (Post Office), Mr. G. E. A. Grindle (Colonial Office), the Duke of Atholl, Lord Sydenham, Lord Montagu of Beaulieu, Lord Drogheda (Foreign Office), Mr. Joynson-Hicks, M.P., Mr. Tyson Wilson, M.P., Mr. A. E. Berriman, Mr. G. B. Cockburn, Mr. H. White-Smith, and representatives of all the self-governing Dominions. Lord Northcliffe, who was the original chairman, had time only to preside at the first meeting before he left for the United States as head of the British War Mission. Maj. Baird, M.P., was the deputy-chairman.

It was soon found that the committee was far too large, and accordingly it divided into several special committees, the most important perhaps being No. 1 under the chairmanship of Lord Sydenham, whose task was to advise on policy and necessary legislation, with special reference to:—

(1) The attitude to be adopted by the State with regard to national sovereignty in the air, and international questions connected with aerial transport.

(2) The question of State ownership (if any) or of necessary State control and regulation of Customs, quarantine, and aliens.

(3) Necessary amendment of the common and statute law as to the air covering private property, and as to compulsory purchase of land for aerodromes and landing grounds.

(4) The principles of liability for damage caused by or to aircraft.

Sovereignty of the Air.

These questions raised at once the initial difficulty of the sovereignty of the air, that is to say, whether the old doctrine that the owner of a piece of land possessed rights *usque ad cœlum* existed up to the present moment and should exist for all time. This question had been discussed as an international one when a Convention sat in Paris in order to deal with the rights of international aviation, and that Convention failed largely over this question, the Germans holding that it was idle to restrict the right of flying over private lands and claiming "the freedom of the air" in a sense which would allow of machines flying, for example, over Portsmouth Harbour. The British delegates, on the contrary, having in view, perhaps, what afterwards occurred, took the contrary view, and held that there must be sovereign rights in any State to control the passage and use of its own air. The Committee came to the conclusion that in any legislation there must be an assertion of the "sovereignty and rightful jurisdiction of the Crown over the air superincumbent on all parts of His Majesty's Dominions and the territorial waters adjacent thereto." They added that, in their opinion, the ordinary three-mile limit of territorial waters would not be sufficient for what may be called "territorial air," and they redrafted the original International Convention for submission to the Foreign Office, and, it is hoped, for the consideration of another conference to be called shortly. It may be recalled that a few days before Parliament rose Mr. Joynson-Hicks asked the Government whether they were taking any steps to call such a conference, and the Foreign Office replied that they hoped shortly to be able to make a statement on the subject. It is regarded as of the highest importance that this conference should be called immediately. At present there are no regulations governing flying on the Continent or foreign flying here. Methods of identification, of inspection, of passports, of Customs, the provision of landing stages, and the thousand and one matters which require consideration and settlement in regard to the new method of transport are still unsettled, and, whether or not Germany takes part in the conference, it is essential, in order that the change from military to civil aviation should not be delayed and complicated, that the conference should get to work at once.

Committee No. 1 also drafted the clauses of an Aerial Navigation Bill dealing with such points as the qualifications for owning aircraft, registration, certificates of air-worthiness, certificates of officers, regulations dealing with collisions, identifications, papers, signals, customs, and the Post Office.

The other important question which came before the Committee was the ownership of air by the individual landowner, and the Committee came to the conclusion that no action for trespass should lie, except for material damage, but that a right of action for trespass should include one for injury caused by the assembly of persons on the landing or ascent of aircraft elsewhere than at authorised aerodromes, and in an action for trespass the obligation on the aviator should be absolute, it not being necessary to prove negligence against him. Under the present law grave damage may be caused to a man or his property by a moving vehicle without any right of redress. If, for instance, a man is run over in the street by a motor-omnibus he cannot obtain damages unless he proves that the driver was in some way negligent, but the Committee felt that in the case of a machine falling from the skies killing or injuring either the landowner, or, say, his poultry, it would be impossible to prove negligence on the part of the aviator, and that accordingly in such a case the actual machine causing the damage should be responsible, even though the fall might be caused by collision with another machine whose pilot was the guilty party.

Conditions of Business Success.

The second Special Committee dealt with the scientific and technical side of aeronautics with a view to ascertaining what could be done in commercial transport by the then existing machines, and they took as their standards four machines—the Handley Page, the de Havilland, the R.E.8, and the Sopwith "Pup." The two aeroplanes which the war has shown to be suitable for commercial aviation are the big Handley Page, one of the largest of which recently flew over London with 40 passengers, and the de Havilland type of large bomber. The De H.10, which has been evolved from the De H.4—[an interesting allegation.—Ed.]—since the Committee sat, is the machine which Mr. Holt Thomas proposes to use in his flights from London to Paris.

The Committee arrived at six definite conclusions about aeroplanes, as follows:—

(1) That for commercial success speed is probably the most material factor.

(2) That for commercial success the speed needed depends very largely on the conditions of competing methods. Between large centres connected by high speed railways, speeds of 100 miles per hour are desirable; but for lirking places between which the railway service is slow or interrupted by sea crossings, lower speeds will be found commercially practicable.

(3) That at present stages of about 500 miles would be the normal limit, but that it will be desirable from the commercial point of view that stages should be as long as possible.

(4) That it is desirable as speedily as possible to develop the existing facilities for night flying, especially for the carriage of mails.

(5) That heavy loading is necessary for commercial success, but since this will involve a high landing speed, development of land and air brakes is necessary.

(6) That in view of certain disadvantages of high landing speed, efforts should be made to keep loading as low as possible consistently with securing a commercial rate of speed, and to provide for aerodromes and landing places possessing the best possible surfaces, and that it may well be hoped that future inventions and improvements in design will enable a lower landing speed to be attained without sacrifice of flying speed.

The Committee also had to consider whether there was a possibility of unexpected inventions modifying the lines of present development, but they came to the conclusion that this was not so, and that while there would be considerable development in the existing appliances for flying there was no prospect of more than quantitative modifications of existing conditions. The existing aeroplane will be improved. Such things as folding wings, already used in the Handley Page machine, will, no doubt, be increased, and an all-round improvement in engines is still certain to come. A very great improvement has taken place—in fact, since the Committee sat, and the Liberty engine may, though it is not yet certain, revolutionise aerial navigation. [Very interesting.—Ed.]

The Committee felt that every effort should be made by State aid or State encouragement to widen the basis of fuel production and to prevent the great interests both of aerial navigation and of automobilism being dependent on fuel of any one kind, particularly if it comes from overseas. The importance of this point has been emphasised during the recent war, in which the civilian consumption of petrol has been so severely restricted. The Committee also considered at great length definite air routes, such as from London to Edinburgh, Glasgow, Dublin, the Riviera, Russia, and South Africa.

Provision of Aerodromes.

The mere provision of aeroplanes is a small part of the question of commercial aviation. The provision of aerodromes and landing stages is urgently needed, and without compulsory powers of purchase, of course, is more difficult. The whole question of landing grounds, in regard to which the military side of aviation has afforded ample experience, had to be considered, and the Committee concluded that landing grounds should—

(1) Bear some reference to the direction of the main aerial routes;

(2) Be sufficiently far from the centres of cities to be fairly clear of houses in the direction of flight;

(3) Be unlikely to be shut in by buildings in the immediate future;

(4) Be as far as possible clear of railways, telegraphs, trees, and other obstructions;

(5) Be situated on ground as far as possible free from mist or fogs;

(6) Be provided with adequate water supply, telephone connections, and good facilities for rail, tram, omnibus, and motor traffic with the different districts of the cities to be visited;

(7) Be capable of expansion.

The Second Committee also came to the conclusion that the use of aircraft would be advantageous :—

(1) In the case of mails, by competing with the telegraph service, or by establishing a new type of express letter service;

(2) In the case of passengers, by affording rapid transit over long distances, particularly where the journey includes a sea crossing; and

(3) By enabling ordinary merchandise, commercial samples, etc., to be carried more rapidly than by any other means.

The Committee, however, came to the conclusion that probably one of the first methods of employing aeroplanes for the transport of passengers might lie, not in a regular service, but in the occasional and increasing use of single machines for rapid journeys, and this appears to be the line upon which development may be expected to take place, as exemplified in Mr. Holt Thomas's scheme, mentioned above.

The third, fourth, and fifth special committees were of a more technical character. The third dealing with production throughout the Empire of the necessary types of aircraft for organised aerial services, the fourth with the possibility of setting up a model type of industrial organisation applicable to the whole of the labour employed in aircraft manufacture and transport; and the fifth with aeronautical inventions and experiments, research in regard to meteorology, and investigation of accidents.

Position of the State.

One question was discussed in several of the committees and in the Main Committee, which will have to be settled by Parliament—namely, whether commercial flying is to be undertaken as a big experiment in State Socialism, or whether it is to be entrusted to individual enterprise, supplemented, so far as landing stages are concerned, by the assistance of the existing military organisation or the exercise by the State of compulsory power of purchase. Some members of the Committee were obviously inclined to favour a State experiment, but Committee No. 1, presided over by Lord Sydenham, reported in favour of State encouragement of private enterprise, and against what may be called a State Socialistic experiment. It is claimed by many that the new industry should be as free from State control as possible. A private firm, it is urged, can properly risk its capital in exploiting a promising new invention or development, but a State department would be in the position of a trustee, would think twice or thrice before risking the necessary funds, and would be responsible to Parliament for its action. During the war the Air Council has admittedly made bold experiments, but it is pointed out that in so doing the Department has been untrammelled by Parliament, and has been free to incur an expense unthinkable in peace time.

A DEFENCE.

By S. Benda.

Personally, I know very little about naval aviation, and understand less. But there is something about the R.N.A.S. which appeals to the imagination. Perhaps it is because, neglected by a careless parent Service, this "distressful" child of the Navy has been thrown from pillar to post, and is even now being fused into an utterly foreign element.

Will the experiment be a success? If it had stood a reasonable chance of success would "R.N.A.F." have become a generally accepted term for the Naval Branch, R.A.F.? History has a habit of repeating itself! If it is impossible to make a soldier of a sailor, how much more impossible must it therefore be to make a sailor into that "kind of a giddy harumfrodite" necessary to the efficiency of the R.A.F.?

There is a certain quotation—from some verses by a Naval officer :—

"Though the instrument be perfect, there are limits to the man."

Strangely enough, while the "instruments" used by the R.N.A.S. were anything but perfect, there appeared to be no limits to the men—except those at the head of things. They made everything on the grand scale—even their mistakes.

There were men who flew "elderly" seaplanes—and "elderly" is a mild term—through the Gallipoli campaign and Grecian affair, and never received any recognition for it. And when their health gave way, owing to malaria and the like, they came home and hung about depôts for any minor shore jobs that might be going. They were unfit for responsible positions, as they had only from one to two years' active service experience to their credit. So they stood by and watched the men who had always been on the spot get the good jobs.

Nobody heard much of the seaplane-carriers after the Cuxhaven raid. Even if the ships were inefficient converted cargo-boats and cross-Channel steamers, or obsolete men-of-war, the R.N.A.S. had to live upon them and work from them, just as if they were everything they should be. And how many people realise an aeroplane was connected with the Jutland battle? Yet, if instead of one aeroplane we had had several airships, there might have been an even greater tale to tell.

Again, at the coast air stations men have been working without the lime-light; night-flying in Zeppelin raids with no proper arrangements for landing—mostly with a ground fog to add to the confusion—when any sane civilian would have refused to go up. The early casualty lists testify to the amount of this kind of flying which was done. These stations provided the men who, on land machines with uncertain engines, patrolled long stretches of sea, come rain, come fine.

Why blame the personnel for the faults of the Department? When the Admiralty ordered land machines, the R.N.A.S. flew them—and incidentally saved the Aircraft Industry. Had the Admiralty ordered seaplanes, the R.N.A.S. would have flown them with the same cheerfulness. Call them pirates if you will, taking the Service as a whole, you cannot call them decoration-hunters.

Comparing the Naval and Military Honours Lists, there is at least as great a percentage of M.Cs. as of D.S.Cs. Ask any average person to name five Naval aviators. They probably cannot do it. Ask them to name five Military aviators—but that is unfair to the Army, who cannot help advertisement when flying in France.

Then, if you want an utterly unadvertised Trade, about which not one person in fifty is correctly informed, the R.N.A.S. can give it you. This Trade has no press, and few firms are in the industry, yet it has done some of the finest war-work. Convoys, sea-patrols, submarine-hunts! I refer to the lighter-than-air craft. They had formed their reputation before ever the safe transportation of the B.E.F. set the seal thereon.

But the R.N.A.S. has passed. It is for the present the Naval Branch, R.A.F. One day, when the Admiralty awakens to its importance, those who have stood by this Service in spite of adverse criticism will see it vindicated. Perhaps we may even see the Aviator take his place in Naval life with the Gunner and Navigator, and the rest. Nothing in life is worth having unless one works for it.

The R.N.A.S. has worked well. I humbly submit the fault—for fault there was—lay not with them.

TWO OPPORTUNITIES.

There are vacancies on the staff of The Aeroplane for two first-class shorthand-typists. Educated women will be preferred, and an intelligent interest in aviation is essential. Application should be made by letter—typed, if possible—to The Editor, The Aeroplane, 166, Piccadilly, W.1.

THE I.A.F. AND PRISONERS OF WAR.

In the course of a letter, dated Nov. 24th, from Sir Arthur Lawley, British Red Cross Commissioner in France and Belgium, to Sir Arthur Stanley, chairman of the Joint War Committee of the British Red Cross Society and the Order of St. John, mention is made of the assistance of the Independent Air Force in the distribution of rations to emergency camps for the reception of prisoners of war on the German frontier.

OFFICIAL PRIVILEGES.

The "Daily Express" correspondent at Glasgow states on Nov. 25th that Mr. Bonar Law would return to London from the meeting with which he opens his campaign there by aeroplane.

It is probable that Mr. Bonar Law will use the aeroplane a good deal during the election if the weather is favourable. He likes flying immensely, and, as is well known, has flown to France on several occasions.

[If Mr. Bonar Law is to be allowed to use Government aeroplanes for election purposes, why should not all other candidates be accorded similar privileges. Will the Air Ministry allow R.A.F. candidates to pilot their own machines? And if not, why not?—Ed.]

CAPT. WEDGWOOD BENN'S CANDIDATURE.

The difficulty which arose with regard to the Radical candidature in Whitechapel and St. George's has been solved by the retirement of Capt. Wedgwood Benn, D.S.O., D.F.C., formerly one of the Radical Whips. Briefly, the position was that Mr. George A. Cohen had been selected as the Coalition candidate, and that the Radical members for the two seats now amalgamated into one constituency—Alderman J. D. Kiley (Whitechapel) and Capt. Benn (St. George's-in-the-East)—were both before the electors in the Radical interest.

LONDON COALITION CANDIDATES.

The following are included in the official list of Parliamentary candidates for London :—

Kensington (North).—Colonel Alan Burgoyne.
Dundee.—Mr. Churchill (L., Coalition).
Paddington (North).—Captain W. G. Aston, R.A.F. (N.P.)
Plymouth (Sutton).—Captain Sydney Ransom, R.A.F. (L.)

THE U.S. AIR SERVICE IN ENGLAND.

Major-General Biddle announced on Nov. 20th that the American soldiers were now rapidly leaving England, and it would not be long before they had left Europe.

The American troops in this country fall into three classes. First come the troops concerned with aviation; then the other troops; and, lastly, the headquarters divisions. Of these, the aviation troops, and, of course, the staffs at headquarters, have been the more permanently established here.

The flying men have been completing their education on British grounds. It is they who have formed the mass of American soldiers actually staying in England.

The aviation troops, numbering, at a rough estimate, over 20,000, are already returning to America. These are the men to whom General Biddle referred. It is expected that the aviation headquarters in Eaton Place will be relinquished in a fortnight or so.

AIR FORCE CASUALTIES.

On Nov. 20th, replying to Lieut.-Colonel Sir J. Norton-Griffiths, Major Baird said that the casualty figures given on the previous day included casualties in the Royal Air Force up to March 31st. The subsequent figures would be given in the course of a few days.

BACK TO CIVIL LIFE.

The "Daily Telegraph," in an article on the Services and the stage, says of Major Robert Loraine, D.S.O., M.C., R.A.F. :—

He, it may be remembered, became a member of the Royal Flying Corps immediately after the outbreak of hostilities, and not only has he been seriously wounded on two separate occasions, but he has also been awarded the D.S.O. and the Military Cross for conspicuous bravery. But, as soon as circumstances permit, he, also, will abandon the theatre of war for one of a more peaceful character.

With this view he has come to an agreement with Mr. Charles B. Cochran which bids fair to be productive of most interesting and important results. By its terms he will appear under Mr. Cochran's management for a considerable number of years, not at first in the West End—for the difficulty of acquiring a suitable theatre has still to be surmounted—but in the principal provincial cities.

Some while back Major Loraine secured the acting rights in Edmond Rostand's famous play, "Cyrano de Bergerac," and it is with the version published by Heinemann that he will resume his histrionic career. What will follow is for the moment on the knees of the gods. As, however, Major Loraine may fairly be described as the legitimate successor to Sir Charles Wyndham, we may at least expect to see him in a series of old and new English comedies.

CRUSHES AND CRASHES.

From the "Daily Chronicle" of Nov. 13th :—

"Our aircraft," says the King in his stirring address to the Royal Air Force, "have always been in the forefront of the battle." Will they also, one wonders, be in the forefront of our Peace celebrations?

A night ascent of hundreds of airships and aeroplanes, all illuminated, and perhaps discharging rockets of victory into the higher air, would be an impressive sight, and one that could be witnessed in comfort by thousands of His Majesty's subjects who are unable to stand a crush. An aeroplane electrically lighted on a dark night is a fine sight.

[First catch your Peace and then celebrate it. But why waste petrol and risk lives in an aerial firework display? Why should R.A.F. pilots risk a crash because would-be sightseers can't stand a crush?—Ed.]

A GOOD PRESS.

From the "Daily Express" of Nov. 15th :—

There is many a hero of the great war about whom the published official records are strangely silent.

When, for example, will the public be permitted to know about Capt. Larcombe, of the Anti-Aircraft Defences, London District?

Capt. Larcombe is the bomb-collecting expert of the Anti-Aircraft Service. He collected, at the greatest possible personal risk, all the unexploded bombs dropped by German aviators in the London district. He also had the equally dangerous task of conveying them to places of safety and exploding them or otherwise rendering them harmless—a task that required not only skill and special knowledge, but pluck and nerve power.

This officer (he has recently been promoted) is perhaps the bravest man in London.

Capt. Larcombe could tell, no doubt, many thrilling stories of his adventures in digging up live bombs and carrying them long distances out of harm's way, half expecting to be blown up at any moment.

AEROPLANES AND RABIES.

The "Times" correspondent writes on Nov. 22nd from Plymouth :—

Lord Clinton, Mr. G. Lambert, M.P., and Major-General Sir David Bruce, R.A.M.C., held an inquiry at Plymouth to-day, on behalf of the Board of Agriculture, into the origin of the outbreak of rabies, of which there have been many cases in Devon and Cornwall. Lord Clinton remarked that the public did not realise the dread nature of the disease, and through carelessness or ignorance failed to report suspicious cases of illness in dogs.

Police and other witnesses gave evidence that the first cases of rabies were reported in July or August, and since then it had been confirmed in many instances, and several persons had been bitten and treated at the Pasteur Institute in Paris.

The opinion was expressed that the disease was probably imported, and a Customs officer said it would require a regiment of soldiers to prevent dogs from being smuggled into the country. Two or three witnesses said they knew that dogs were brought across the Channel by airmen, in spite of the official denial.

Among other suggestions made was that the Dogs Order should be more stringent, that it should be in plain English, and that the police should have power to shoot stray dogs at sight.

[Officialdom can deny as much as it likes, but the importation of dogs from France by aeroplane has been a common topic of conversation for quite a while.—Ed.]

AN AERONAUTICAL SCHOLARSHIP.

In memory of his son, the late Sub-Lt. H. Caldecott Lake, R.A.F., late R.N.A.S., who was killed in a seaplane accident some time back, Mr. James C. Lake, of James C. Lake and Co., paper merchants and manufacturers, 13-15, Little Sutton Street, Clerkenwell, E.C.1, has established a scholarship in aeronautical engineering and aviation.

The scholarship, which will be named "The Harold Caldecott Lake Scholarship," will be of an annual value of £50, and be tenable for two years at a University or Technical College.

Boys, who have been resident in Heston and Isleworth Urban District for at least three years, and also, in attendance at the Isleworth County School for three years, will be eligible to compete in the examination for the Scholarship.

The course Mr. Lake has taken is an excellent one in many respects, and will provide a good, sound technical education to the right type of boy. It is Mr. Lake's hope that those merchants, manufacturers and professional men who are in a large way of business, as compared with himself, will start something on similar lines, but on a much larger scale.

HELGOLAND.

The following letter appeared in "The Times" of Nov. 23rd :—

Sir,—I offer a suggestion to the Peace Conference. Neutralise Heligoland, and make it an international aerodrome for commercial aircraft. No naval or military aircraft to land on Heligoland, except under stress of weather or for engine trouble.—Your obedient servant, G. F. W.

[A very pretty suggestion, but for the fact that Helgoland—to give it the correct spelling—does not happen to be on the direct air route from anywhere in particular to anywhere else.—Ed.]

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NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Nov. 19th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officers, 3rd Cl.—And to be actg. Capts while so empld.—Maj. A. J. Currie, Oct. 9th; Lt. H. Fletcher, Oct. 10th; Lt. H. B. Dresler, Nov. 6th.

The following temp. appt. is made :—Staff Officer, 3rd Cl.—(Graded for purposes of pay at Air Ministry rates.)—R. G. Parry, D.S.O. (Eng. Lt., R.N.), and is granted a temp. commn. as Capt, July 4th (substituted for notification in "Gazette," Oct. 18th).

The following temp. appts. are made :—Brig.-Gen. (Air Staff).—K. Wigram, C.B., D.S.O. (Bt.-Col., temp. Brig.-Gen., Ind. Army), is granted a temp. commn. as Col., and to be actg Brig.-Gen. whilst so empld., Oct. 3rd.

Staff Officer, 2nd Cl. (O.).—Maj. J. St. A. King, Nov. 8th

Staff Officer, 3rd Cl.—Lt. J. C. Watson, and to be actg. Capt. whilst so empld., May 22nd.

FLYING BRANCH.—Capt. R. E. Darnton to be graded for pay as Capt. whilst empld. as Capt. (A.), Nov. 4th.

Lts. to be actg. Capts. whilst empld. as Capts. (A.).—H. R. W. Ellison, Oct. 27th; F. W. W. Wilson, Nov. 1st; J. Cunliffe, Nov. 4th; M. G. S. Burger, F. Gibbons, O. J. Rose, D.F.C., G. S. White, Nov. 5th; E. L. Raworth, Nov. 12th; J. C. Green, Nov. 13th.

To be actg. Capts. whilst empld. as Capts. (A. and S.).—Lt. G. C. Mackay, D.F.C., Oct. 29th; Sec. Lt. R. Jackson, Nov. 9th.

Lts. to be actg. Capts. whilst empld. as Capts. (K.B.).—L. W. Baker, Sept. 6th; C. W. Hawker, M.C., Oct. 9th; W. R. Phillips, D.F.C., Nov. 4th; G. G. L. Blake, D.F.C., D.C.M., Nov. 6th.

Lts. to be actg. Capts. whilst empld. as Capts. (O.).—A. A. N. Haywood, Aug. 1st; J. W. G. Clark, Oct. 26th.

Sec. Lts. (actg. Lts.) to be actg. Capts. whilst empld. as Capts. (O.).—L. J. Chandler, D. G. Fleming, W. Smith, Aug. 1st.

Lts. (Ad.) to be Lts. (A.).—F. M. Johnson, Oct. 23rd; W. L. S. Keith-Jopp, Nov. 8th; D. K. Sworder, Nov. 12th

Sec. Lts. (Hon. Lts.) to be actg. Lts. (K.B.) whilst empld. as Balloon Comdrs. :—L. A. Sterling, M.C., Oct. 26th; H. S. Starkey, Nov. 6th.

Sec. Lts. to be actg. Lts. while empld. as Lts. (O.) :—A. F. Adams, L. J. Chandler, W. H. Dutton, D. G. Fleming, P. J. Hayes, K. C. McKenzie, A. Neeson, W. Smith, W. A. Thompson, E. J. Withers, April 1st; G. E. Durrance, J. F. Mehigan, G. J. Ross, H. J. White, May 9th; L. J. Booth, J. Bowen, G. Lansdowne, A. Lees, E. Smith, Aug. 18th.

The following are granted temp. commns. as Sec. Lts (A.) :—H. Chester-Master (late Capt., Army Chapns. Dept.), July 15th; J. W. Mason (temp. Sec. Lt., Northn. R.), Oct. 13th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—534191 E. J. Bell, July 29th; 48461 S. G. Massey-Lynch, Aug. 24th; 265641 A. E. Filby, Sept. 12th; 265085 C. Wise, Sept. 17th; 89702 K. D. Foster, Oct. 1st; 119877 J. L. Sleigh, 110689 C. E. Eastgate, 37735 A. W. Gilbert, 128177 A. W. Macdonald, Oct 28th; 522764 G. W. L. Anderson, 47192 G. A. March, 48028 E. Gharge, 1750 H. R. Skilling, Oct. 29th; 556959 F. E. J. Davis, Oct. 30th; 12450 H. J. E. Smith, 28749 H. N. Bradbrooke, 128382 W. J. Humphries, 110127 A. Shildrick, 52496 S. P. Tarrant, 45855 J. S. Walthall, 100363 W. Riddell, 110579 T. E. Seferth, 6626 R. W. Sinclair, 10/89751 J. A. Bauer, 80586 A. D. Page, 10038 W. R. Tope, Oct. 31st; 100351 J. D. Sinclair, 117503 J. B. Gunu, 117782 R. Curry, 767400 W. H. Holton, 117474 D. Richmond, 110348 E. T. F. Brown, M2/4747 A. J. Fryer, 110394 L. D. Pinches, 183879 H. C. Howard, 154388 B. Hopkins, 4821 J. W. M. Hopkins, Nov. 1st; 110337 A. McWilliam, 128105 L. E. Headley, Nov 2nd.

The following Flt. Cadets are granted temp. commns as Sec. Lts. (A. and S.) :—128253 J. D. Farquharson, Aug. 30th; 137875 M. E. Noyce, 201062 C. N. Osborne, 137877 T. W. Osborne, Aug. 31st.

The following Flt. Cadets are granted tem. commns. as Sec. Lts. (Obsr. Officers) :—175376 K. C. Watson, 128363 L. J. Dennis, 117611 R. M. Allan, 110511 W. Connor, 536091 W. H. Dawkes, Sept. 5th; 178952 J. Brown, Oct. 12th.

515622 Flt. Cadet A. C. Precious is granted a temp. commn. as Sec. Lt. (S.), Oct. 31st.

Lt. H. B. Parkinson is removed from the Service, the King having no further need of his services as an officer, Sept 10th.

The following relinquish their commns. on ceasing to be empld. :—Sec. Lt. F. C. Bowles, Oct. 20th; Sec. Lt. J. W. Mason (Sec. Lt., attd. Northn. R.), Oct. 20th; Lt. C. J. I. Griffith, M.C. (Lt., R.F.A., Spec. Res.), Lt. J. E. Williams (Lt., Northn Yeo.), Nov. 8th; Lt. R. A. Lane, Nov. 14th.

Capt. E. J. Crisp resigns his commn. to resume his medical studies, and is granted the hon. rank of Capt., Nov. 20th.

Lt. E. Holman relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon rank of Lt., Nov. 20th.

Sec. Lt. C. R. Macnamara relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Nov. 20th.

The following Sec. Lts. relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs. :—P. L. Lowenhoff, S. E. Moss, F. O. Prytz, C. H. Strong, Nov. 20th.

The date of appt. of Capt. (actg. Maj.) M. D. Barber is June 28th, and not as in "Gazette," Oct. 29th

The surname of Sec. Lt. J. L. Norton is as now described, and not as in "Gazette," Oct. 15th

The notification in "Gazette," Nov. 5th concerning Flt. Cadet G. W. H. De Carter is cancelled.

The notification in "Gazette" Nov. 5th concerning Sec. Lt. C. R. Calder is cancelled.

ADMINISTRATIVE BRANCH.—J. Harvey, D.S.O. (Lt.-Col., T.F. Res.) is granted a temp. commn. as Lt.-Col., Sept 27th, seny. from April 1st.

D. B. O. F. Lord Redesdale (Capt., Northd. Fus.) is granted a temp. commn. as Capt., and to be actg. Maj. whilst empld. as Maj., Sept. 9th, seny. from April 1st.

Capt. J. T. Waller, M.C., to be actg. Maj. whilst empld. as Maj. from (A.), Nov. 4th.

The following are granted temp. commns. as Capts., seny. from April 1st :—T. L. Stevens (Capt., A. O. Dept.), Sept. 9th; C. B. Booth (temp. Capt., Lab. Corps), Nov. 2nd.

Lt. (Hon. Capt.) C. H. Lewis to be actg. Capt. whilst empld. as Capt., from (O.), Sept. 13th (substituted for notification in "Gazette," Oct. 25th).

To be actg. Capts. whilst empld. as Capts. :—Sec. Lt. (Hon. Lt.) (actg. Lt.) J. G. Beckham, Nov. 5th; Lt. J. W. J. Cheyney, from (T.), Nov. 6th; Lt. B. D. Bellamy, from (T.), Nov. 8th.

Lt. (actg. Capt.) F. G. S. Williams retains the actg. rank of Capt. whilst empld. as Capt., from (A.), Oct 25th

Capt C. E. Dalton to be Capt., from (S.O.), Nov. 4th.

Lts. (A.) to be Lts. :—V. B. Allen, W. A. Barnes, G. D. Wilson, Oct. 26th; E. H. Hereford, Oct. 28th; I. M. Fry, C. D. Kirkbride, Nov. 1st; (Hon Capt.) W. B. Powell, Nov. 2nd. C. F. Cowper, Nov 4th; F. R. Pender, Nov. 7th.

Lt. T. B. Fraser to be Lt., from (K.B.), June 11th.

Lts. (O.) to be Lts. :—J. W. Winter, Aug. 8th; A. L. Crow, Aug. 19th; R. M. Pegg, Oct. 1st; E. F. Dixon, Oct. 21st; W. B. Judd, Oct. 28th; R. S. Rudd, Nov. 1st; C. H. Lawrence, Nov 4th.

The following are granted temp. commns. as Lts, seny. April 1st :—A. Chalk (temp. Lt., Lab. Corps), April 12th; O. C. Skinner (Lt., Lancers), June 18th; M. J. V. B. Smyth (Lt., R. Ir. R.), J. P. D. Mostyn (Lt., R. Suss. R.), July 10th; S. H. M. Donaldson (Capt., Spec. List), and to be Hon. Capt., July 24th; H. M. Kendle (temp. Lt., Wilts R.), July 26th; A. E. Miller, M.C. (Capt., W. Rid. R.), and to be Hon. Capt., Aug. 18th; J. C. Bain (temp. Lt., E. York R.), Aug. 22nd; E. L. Davies (Lt., Gen. List), Sept. 3rd; H. Lupton (Lt., W. Yorks. R.), Sept. 11th; G. S. Kilby (Capt., Lond. R.), and to be Hon. Capt., Sept. 14th; A. F. Basset (Lt., T.F. Res.), Sept. 18th; Sir C. S. Kirkpatrick, Bt. (temp. Lt., Spec List), Sept. 20th, W. Grischotti (Capt., Shrops. L.I., Spec. Res.), and to be Hon. Capt., R. S. Hay (Lt., Sea. Highrs., T.F.), R. P. Kember (Lt., N. Lancs. R.), Sept. 23rd; C. E. Bright (Lt., E. Lancs. R.), Oct. 1st; A. Roberts, M.C. (temp. Capt., Dur. L.I.), and to be Hon. Capt., J. E. Tomlinson (Capt., Ches. Yeo.), and to be Hon. Capt., Oct. 2nd; E. N. T. Edwardes (Lt., R.F.A.), J. Inglis (temp. Capt., R. Highrs.), and to be Hon. Capt., Oct. 3rd; S. D. Antill (temp. Lt., R. Fus.), Oct. 6th; A. Rawlins (Lt., Lancers), Oct. 11th; F. W. Irving (Lt., Lancs. Fus., T.F.), Oct. 13th; K. Owen (Lt., E. Lancs. R.), Oct 14th; B. M. Machin (Lt., W. Rid. R.), Oct. 16th; A. W. Rose, M.C. (Lt., Essex Yeo.), Oct. 21st; J. H. G. McKee (Lt., Sea. Highrs., T.F.), Oct. 23rd; F. C. Clements (Qrmr. and Hon. Capt., R. Ir. Fus.), and to be Hon. Capt., W. H. Crotty (Lt., R. Ir. Fus.), Oct. 26th; A. J. M. Fairbairn (Lt., K. Af. Rif.), H. N. Stevens (temp. Lt., Northd. Fus.), Oct 28th; A. P. G. Vivian (Lt., R. Fus.), Oct. 29th; J. Gerrard (Capt. and Qrmr., Gen. List), and to be Hon. Capt., Nov. 1st; C. A. Howe (Lt, R.A.), Nov. 4th; K. Nicholson (Capt., W. Rid. R.), and to be Hon. Capt., Nov. 6th.

The following are granted temp. commns. as Sec. Lts., and to be actg. Lts. while empld. as Lts. :—S. W. Lewis (Sec. Lt., Worc. R.), April 1st; A. Tyler (Sec. Lt., A.C.C.), April 23rd, seny. April 1st.

Sec. Lts. to be actg. Lts. while empld. as Lts. :—S. J. Croad, Aug. 26th; F. Salmon, Sept. 1st; C. L. Sharman, from (T.), Sept. 24th; A. H. Silver, from (T.), Oct. 26th; C. N. Cruttwell, Oct. 28th; H. D. Lumb, Nov. 4th; S. A. Knight, Nov. 5th; H. Dawes, Nov. 8th; W. J. Dayrell-Steyning, Nov. 9th; A. T. Cooper, P. Geach, from (T.), Nov. 11th.

The following are granted temp. commns. as Sec. Lts. :—A. M. W. Leyfield, July 8th, P. Perry, Nov. 18th.

Sec. Lt. E. Hill is dismissed the service by sentence of a General Court-Martial, Aug. 24th.

Lt. (actg. Capt.) H. B. Everest (Lt., attd. R. War. R.) relinquishes his commn. on ceasing to be empld., Nov. 14th.

Sec. Lt. R. M. Hillman resigns his commn., Nov. 20th.

Sec. Lt. G. A. Large resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Nov. 20th.

The initials of Maj. (actg. Lt.-Col.) W. P. Alexander are as now described, and not as stated on page 7071 of "Gazette," June 14th.

TECHNICAL BRANCH.—Maj. J. Dickson to be actg. Lt.-Col. while empld. as Lt.-Col., Nov. 4th.

Maj. H. A. Oxenham, M.C., to be Maj., from (S.O.), Nov. 4th.

W. G. Lawrie (Bt. Col., R.E.) is granted a temp. commn. as Maj., and to be Hon. Col., Nov. 16th, seny. April 1st

To be actg. Capts. while empld. as Capts. :—Lt. W. D. Rhys, Sec. Lt. (actg. Lt.) H. N. Stradling, Sept. 1st; Sec. Lt. (Hon. Lt.) (actg. Lt.) L. W. Allen, M.C., Nov. 7th; Capt. E. A. Power to be Lt., from (A. and S.), Nov. 4th.

Lts. to be Lts. :—E. G. Pole, from (O.), Aug 12th; E. C. Hucklebridge, from (A.), Oct 30th; W. Hay, from (O.), Nov. 6th; C. J. M. Lowe (temp. Lt., R.E.) is granted a temp. commn. as Lt., Oct. 15th.

Sec. Lts. to be actg. Lts. while empld as Lts. :—J. W. White, June 19th; R. J. Sladden, July 1st; (Hon. Lt.) J. R. Brown, M.C., Sept. 1st; (Hon. Lt.) W. B. Rayner, Oct. 29th; E. A. Gater (temp. Sec. Lt., Tank Corps) is granted a temp. commn. as Sec. Lt., Sept. 30th, seny. April 1st.

The following relinquish their commns. on ceasing to be empld. :—Sec. Lt. (Hon. Lt.) F. M. Buller (Lt., Rif. Brig.), Nov. 5th; Capt. A. T. Lee (Lt., R.N.V.R.), Nov. 6th.

MEDICAL BRANCH.—Maj. (actg. Lt.-Col.) H. C. T. Langdon retains the actg. rank of Lt.-Col. while empld. as Lt.-Col., from (S.O.), Nov. 6th; J. T. T. Forbes is granted a temp. commn as Lt., Nov. 15th.

(*Continued on page 2027.*)

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A REPORT ON THE L.V.G. TWO-SEATER BIPLANES.

The following report is published by kind permission of the Technical Department, Ministry of Munitions, to whom the Editor desires to express his thanks.

This report is concerned with two L.V.G. biplanes, of which one is of the C.V. type, while the other, a C.VI. type machine, is of later design, embodying certain alterations and improvements. The C.V. machine is allotted G/3BDE/5, and the C.VI. which was brought down near Proven on Aug. 2nd by two S.E. 5's, piloted by Lieuts. Gordon and Gould, is allotted G/2Bde/21.

Any description which follows and is not definitely stated to apply to either model, must be read as appertaining to the C.VI. type.

The C.V. machine was only slightly damaged, and has been put into flying order, but the C.VI. has suffered severely, and it must be stated that on this account the G.A. drawings at the end of this report are not guaranteed to be of absolute accuracy in every respect. The greatest care has, however, been taken in their preparation, and only features of rigging such as dihedral and stagger (besides the tail planes, which are in a very fragmentary condition) are at all doubtful. In matters of detail the drawings are accurate.

Some leading particulars of both machines are given below :—

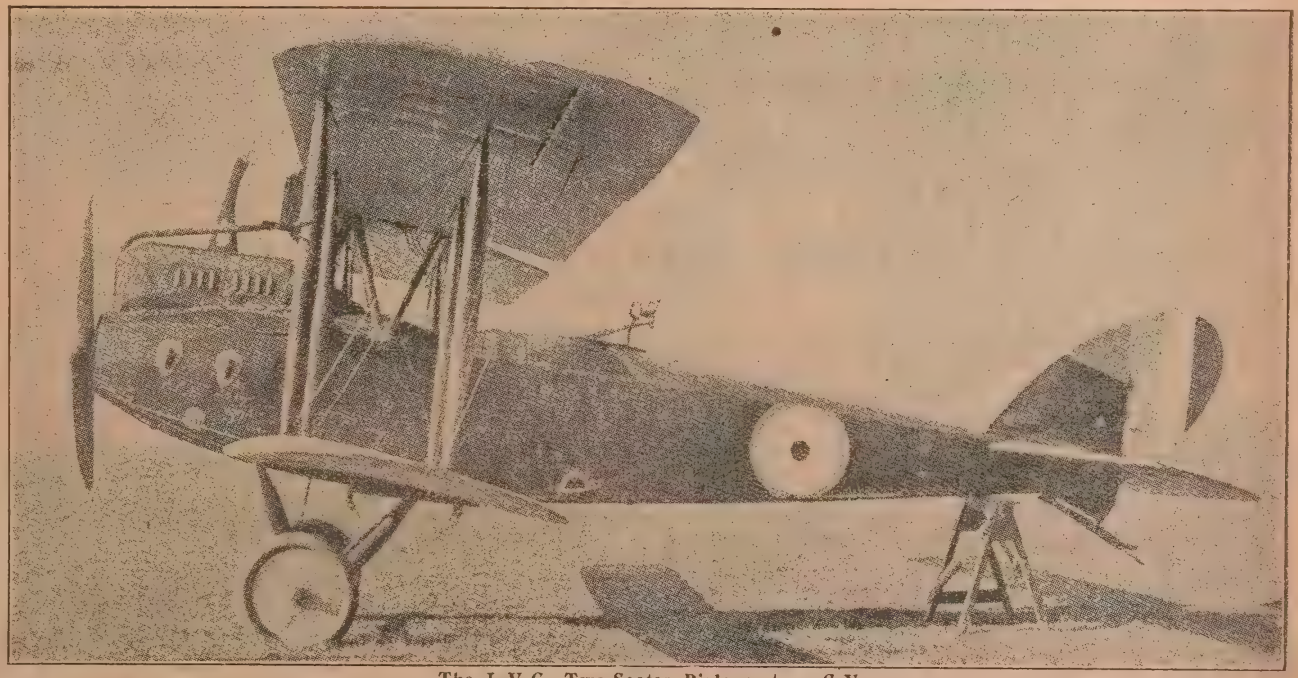
	C.V. Type.	C.VI. Type.
Weight empty	2,188 lbs.	2,090 lbs.
Total weight	3,141 lbs.	3,036 lbs.
Area of upper wings (with ailerons)	238.4 sq. ft.	196.0 sq. ft.
Area of lower wings	190.4 sq. ft.	160.0 sq. ft.
Total area of wings	428.8 sq. ft.	356.0 sq. ft.
Loading per sq. ft. of wing surface	7.3 lbs.	8.5 lbs.
Area of aileron, each	13.6 sq. ft.	11.2 sq. ft.
Area of balance of aileron	.4 sq. ft.	0.0 sq. ft.
Area of tail plane	21.6 sq. ft.	28.0 sq. ft.
Area of fin	5.2 sq. ft.	5.2* sq. ft.
Area of rudder	6.8 sq. ft.	6.8* sq. ft.
Area of balance of rudder	.6 sq. ft.	.6* sq. ft.
Area of elevators	20.8 sq. ft.	16.0 sq. ft.
Area of balance of elevator (one)	1.2 sq. ft.	.8 sq. ft.
Total weight per H.P.	13.7 lbs.	13.2 lbs.
Crew	2—Pilot and Observer.	
Armament	1 Spandau and 1 Parabellum gun.	
Engine	230 H.P. Benz.	
Petrol capacity	52½ gals.	52½ gals.

*Assumed same as C.V. type.

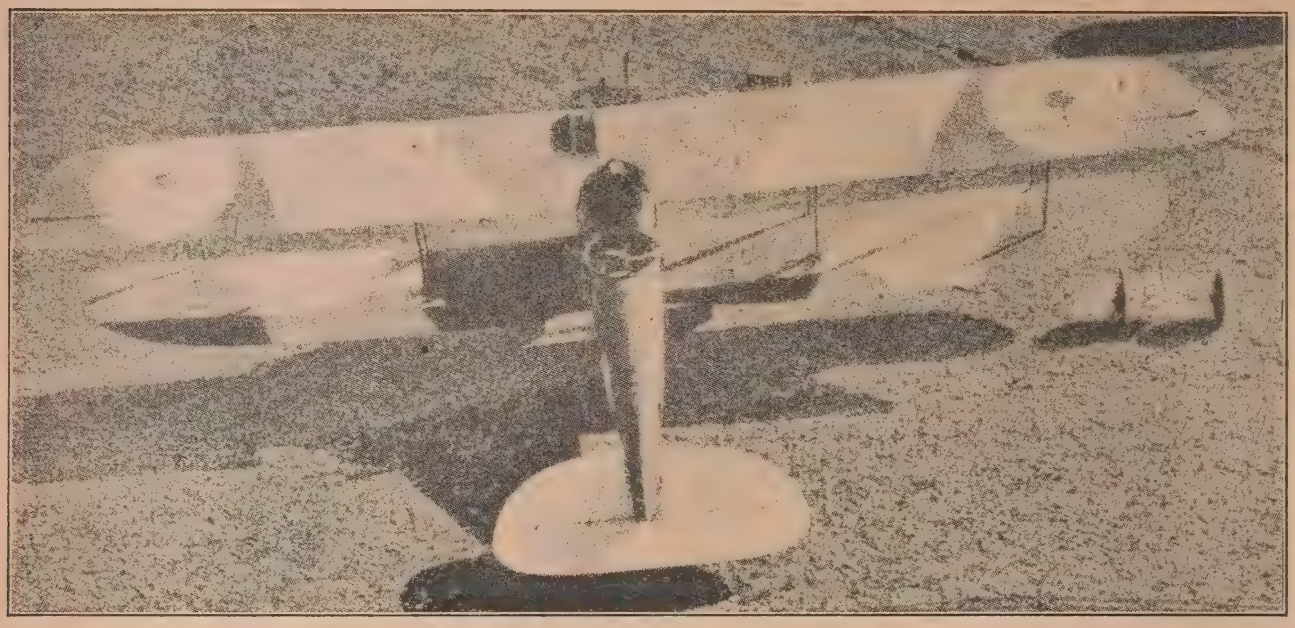
WINGS.

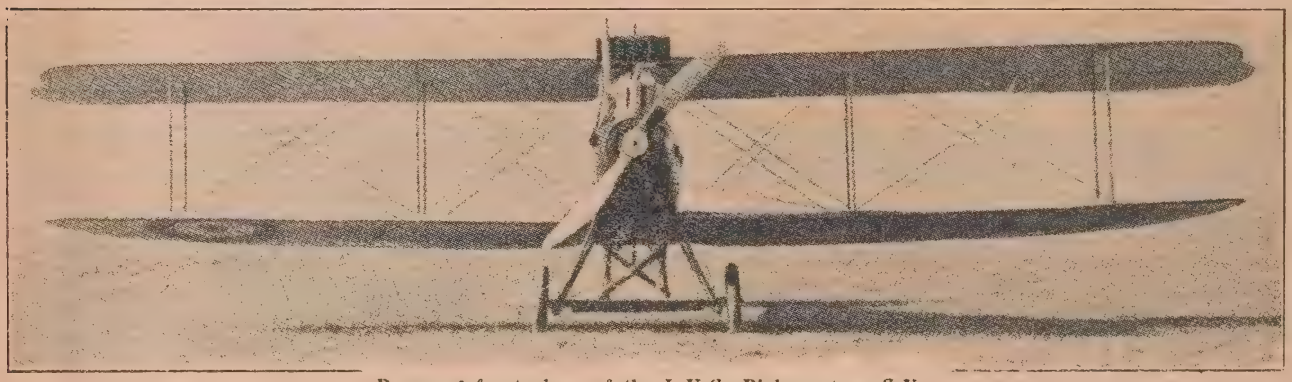
There are several important differences between the arrangement of main planes of the two models, as will be seen by referring to the General Arrangement Drawings.

The wings of the C.V. L.V.G. are without stagger, and are not swept back, but both upper and lower planes are set at a dihedral angle, this being 1 deg. for the upper, and 2 deg. for the lower wings. The lower planes are smaller all round than the upper, and have rounded tips. The upper planes only have ailerons, which are of equal chord throughout their length, and are balanced. These planes also follow what was, until recently, the usual enemy practice, by being joined at their roots to a central cabane. There is, therefore, no horizontal centre section in this aeroplane, except for the 3-ply box (about 4 in. wide), which surrounds the horizontal tube of the cabane. For improving the view, the upper plane is cut away over the pilot's cockpit. Relative to the crank-

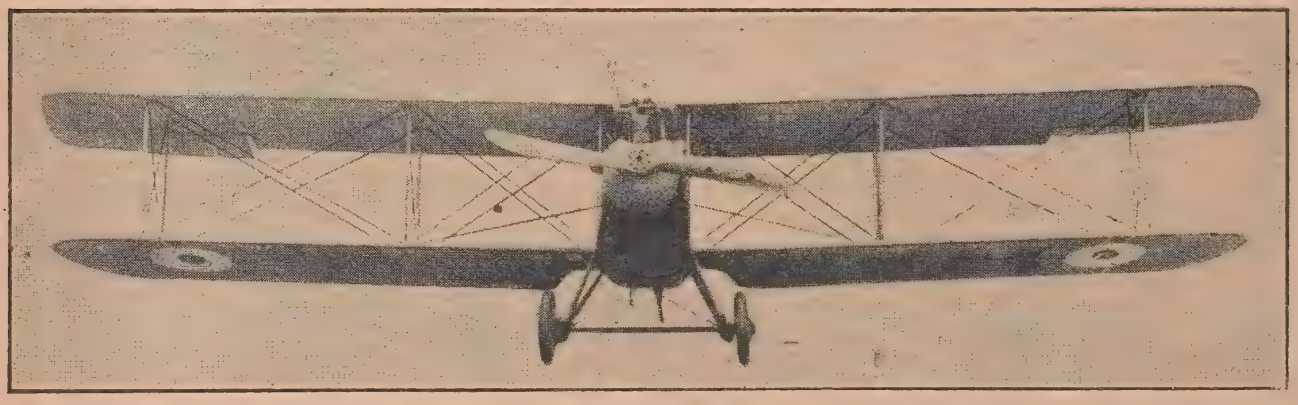


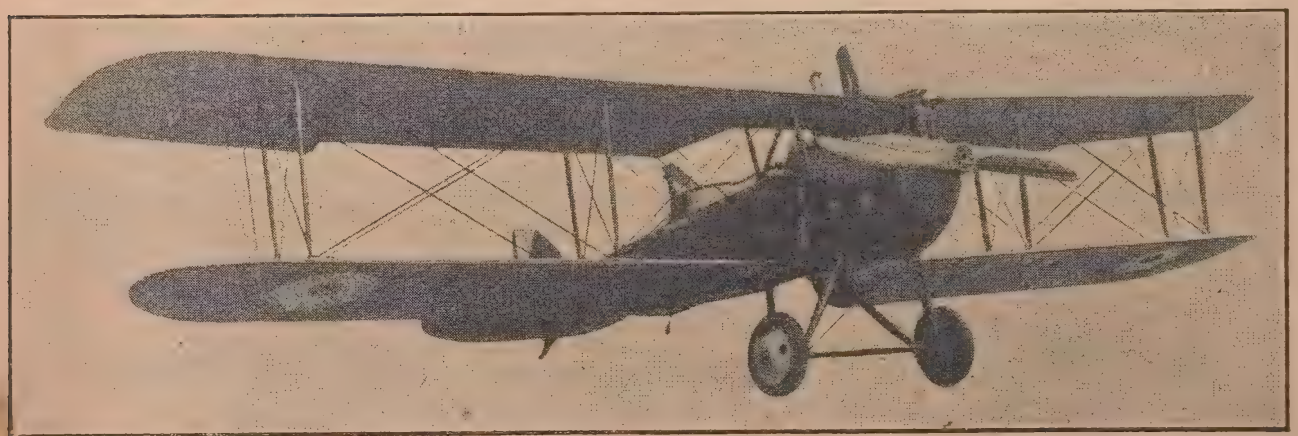
The L.V.G. Two-Seater Biplane, type C.V.





Rear and front views of the L.V.G. Biplane, type C.V.





Front and front three-quarter views of the L.V.G. Biplane, type C.VI. Note the absence of balanced extensions on the ailerons, and the different nose-piece.

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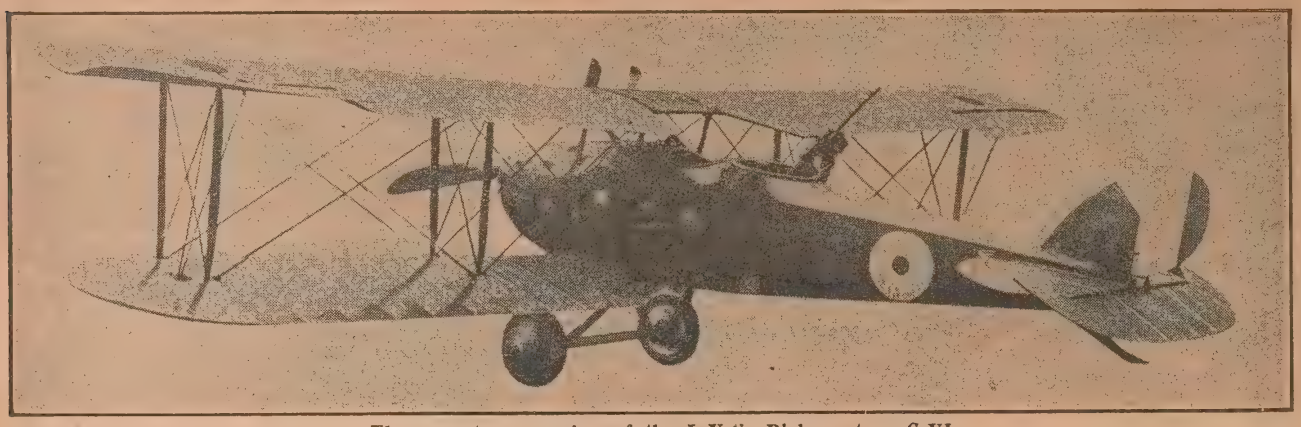
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Three-quarter rear view of the L.V.G. Biplane, type C.VI.

shaft the upper wing has a constant angle of incidence of 5 deg. That of the lower wing is the same, except at the tip, where the angle is washed out to 4 deg., and at the root to 4⅛ deg.

Both upper and lower wings are attached to the body by the same general means, this being adapted to the particular positions and conditions of each joint. In the case of the upper planes, the cabane has lugs welded to its upper side at both ends. Fig. 1 shows the fitting at the forward end, and the pierced lug on the wing spar (see Fig. 2) fits into the fork. The same type of hinge pin is used for all wing joints, and for the aileron hinges also. It consists of a short length of steel tube, carrying at one end some form of stop, and at its other end a slot in which a short rectangular piece of steel is free to rotate, the steel piece being pivoted at its centre. Thus, when the steel piece is placed parallel to the tube, the whole fitting can be passed through any hole which accommodates the tube, but when the piece is placed at right angles to the tube axis, the tube cannot be withdrawn through a small hole. A helical spring ensures that the steel piece shall be pressed against the hole, and not be free to slip into the parallel position.

The lower wing attachments are very similar, as will be gathered from Figs. 3 and 4, which show respectively the front and rear joints, and this plan has not been changed on the C.VI. type of L.V.G., except that the lug on the wing spar is now fashioned as shown in Fig. 5.

In the later model—the C.VI.—the planes are of the same general shape, but important changes are remarked. The radiator has been moved from the position it occupied on the C.V. (see G.A. Drawings), and is now built into the horizontal centre section. It is, of course, common German practice to build the radiator into the upper plane, and such a position is not incompatible with the cabane type of centre section strutting. This is particularly true when—as is the case in the L.V.G.—a service petrol tank is supported by the upper plane, and can be made to balance the radiator. It is clear, therefore, that the alteration in design from the cabane system to the centre section system has not been made solely to accommodate the radiator.

So far as may be judged from the machine in its present condition, the C.VI. has a positive stagger of 10 in., and both upper and lower planes have a similar dihedral angle, viz., 1 deg. Ailerons are still fitted to the upper plane only, but are not balanced in this model. The upper and lower wing sections of the C.VI. model are shown in Fig. 6, and Fig. 7 gives the C.VI. upper wing section with the R.A.F. 14 section superimposed. The R.A.F. 14 section is dotted.

Wing Construction.

(These details were all noticed in the C.VI. machine, as in the earlier type the planes are still covered with fabric.)

Both front and rear spars are of the box type, and wrapped with fabric. Sections drawn to scale are given in Fig. 8, but these drawings do not show internal construction, as the spars have not yet been divided.

The overall height and width of each spar, taken respectively parallel and perpendicular to the vertical walls, are:—Upper plane, front spar, height 3¼ in., width 1 7-16 in.; rear spar, height 3 in., width 1 15-16 in. Lower plane, rear spar, height 3 in., width 1-11-16 in.; front spar, height 2⅞ in., width 1 11-16 in.

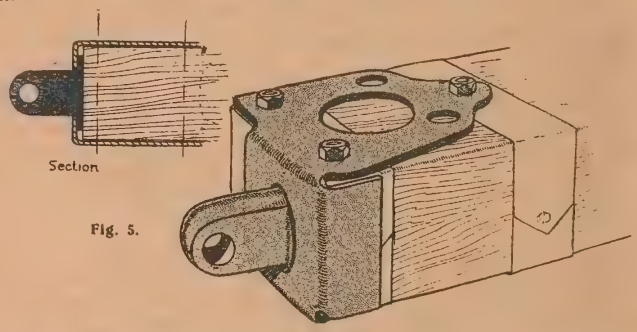


Fig. 5.

It has been possible to draw a section of the front spar of the C.V. machine, and the result is given in Fig. 9. There is every reason to believe that all the other spars of the L.V.G. are of similar construction. Fig. 10 shows a crude but effective method of repairing a broken spar. The repair was carried out by the enemy, probably in the field.

The leading edge is of the customary C section, and is followed at 7 in. interval by the front spar. The space between the two spars—25⅝ in. wide—is braced with cables and piano wire, and contains four ash compression struts of I section, which are simply butted into sockets obviously intended to carry steel tubes.

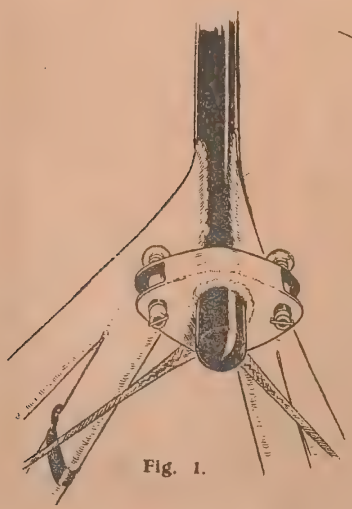


Fig. 1.

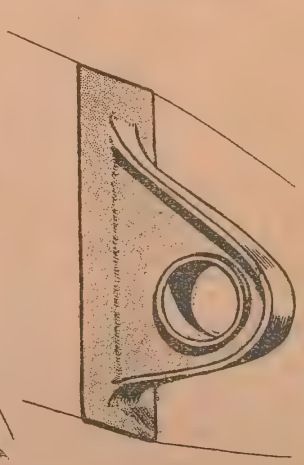


Fig. 2.

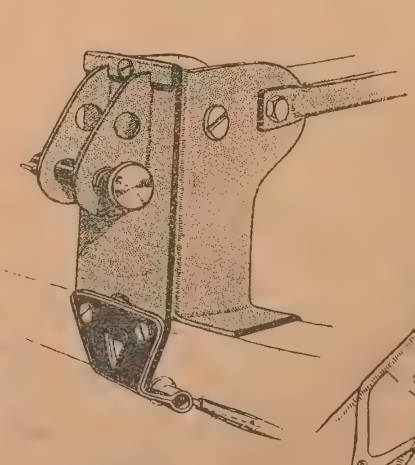


Fig. 3.

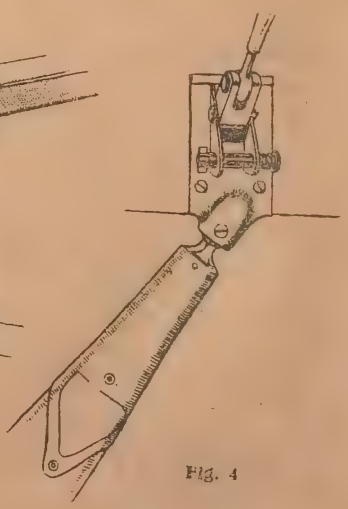


Fig. 4

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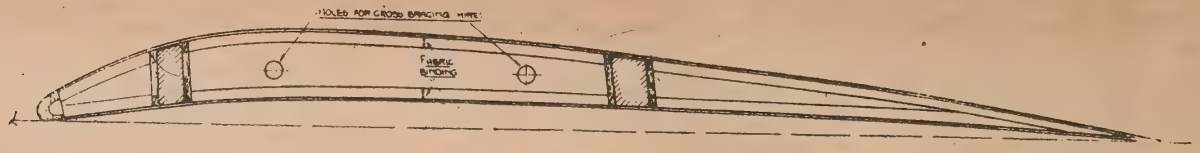
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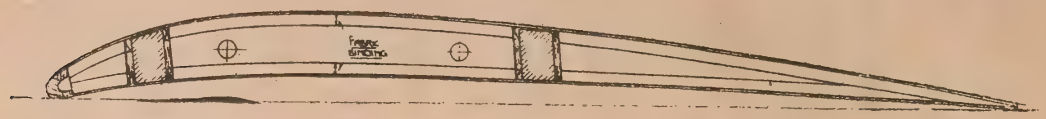


Fig. 6.

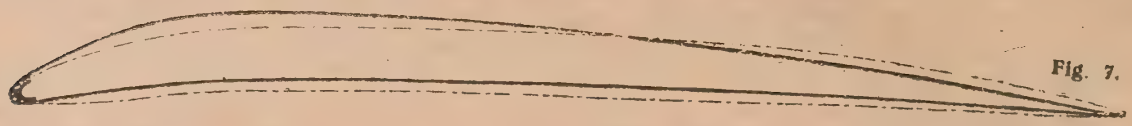


Fig. 7.

(These compression struts are steel in the C.V. model.) The distance from the rear spar to the wire trailing edge is 2 ft. 6⅜ in. The ribs, of which a section is shown, are of the usual type, and are spaced at intervals of 16¾ in., centre to centre. They are unlightened. Equally between them are placed two false ribs—mere strips of wood let into the leading edge and tacked to the spars. These false ribs have floating ends 7½ in. behind the rear spar.

The construction of the lower plane does not differ from that of the upper plane just described, except that the false ribs are not found in it.

Ailerons.

The ailerons of the L.V.G. no longer possess the peculiar step in the trailing edge that has for so long been associated with the design, and the ailerons are rather different in the two types. The C.V. model has ailerons which are balanced, while those of the C.VI. are not. The respective areas are given on the first page of the report. With regard to the constructional features only those of the later type can be described. The whole construction is of wood, with the exception of the aileron lever, a sketch of which is given (Fig. 11). This is of the usual curved type in the C.V. machine (see Fig. 12), but is made to serve as a rib also in the C.VI. type. The wooden ribs, together with the wood leading and trailing edges, form a structure which is very light. Both machines have the ailerons hinged to a false spar some distance behind the rear spar, and the hinges are all of the type that has already been described in connection with the wing attachments (see Fig. 13).

Struts.

The L.V.G. is one of the few enemy aeroplanes that employ interplane struts of wood. They are of the shape shown in Fig. 14, and are of streamline section (2¼ in. × 1 9-16 in.), slightly hollowed out for lightening purposes. Fabric is wrapped round the strut in three places, and the form of the strut sockets is made clear in the sketch (Fig. 14), which shows one of the C.V. struts.

The types of strut socket employed in the C.VI. machine are shown in Fig. 15, while Fig. 16 shows how the strut is attached to the spar. The socket is held in place on the strut by simply inserting a suitable length of steel tube through a drilled hole in socket and strut and riveting over the ends.

As has already been mentioned, the centre section struts are different in the two types. In the C.V. machine the cabane, the shape of which is made clear by the G.A. Drawings, is made of streamline steel tubing. This has been changed, and the C.VI. model has parallel centre section struts of wood, which are like the letter N when seen from the port side. Fig. 18 shows the joint between the spar of the centre section and the strut. The unusual arrangement of the cross-bracing of this centre section should be noticed in the front view, General Arrangement Drawings.

The line of the front limb of the N is carried on by the third fuselage bulkhead, and finishes at the front joint of fuselage and undercarriage. The angle between the rear two limbs of the N is practically bisected by the line of the fifth bulkhead, which finishes at the rear joint of fuselage and under-

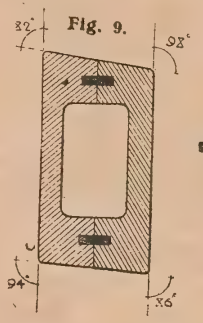


Fig. 9.

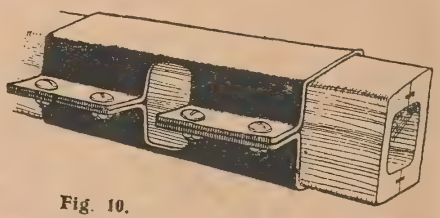


Fig. 10.

carriage. This is shown by a diagram, Fig. 17. The C.V. machine has a sloping steel tubular strut between engine bearer and rear undercarriage attachment (see Fig. 19), but by the rearrangement of bulkheads the necessity for this has vanished, and the strut is not found in the later model.

Fuselage.

The earlier types of L.V.G. had bodies built on the cross-braced girder system. Both the machines described possess the same type of fuselage, totally different from the girder system, viz., a framework of bulkheads and longerons, covered with a thin layer of 3-ply, and totally without wire bracing. Fig. 21 gives

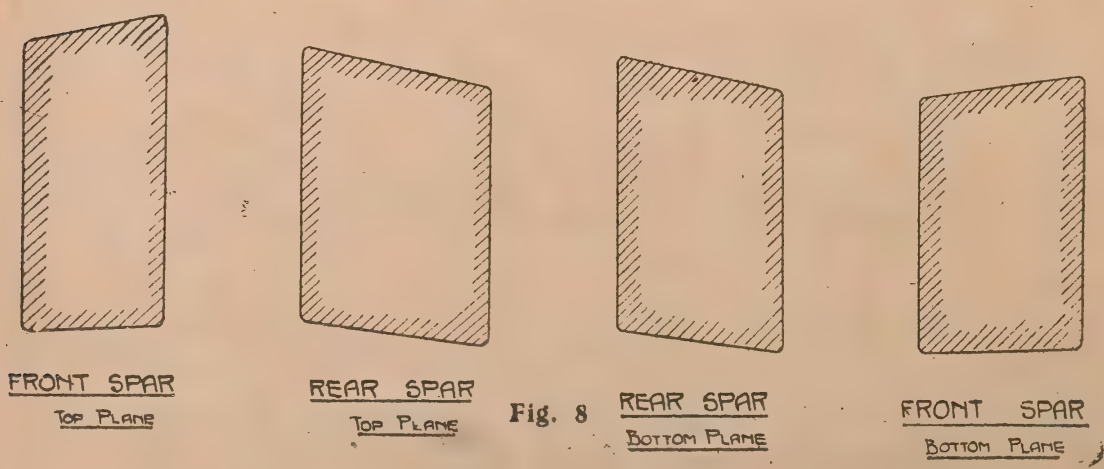


Fig. 8

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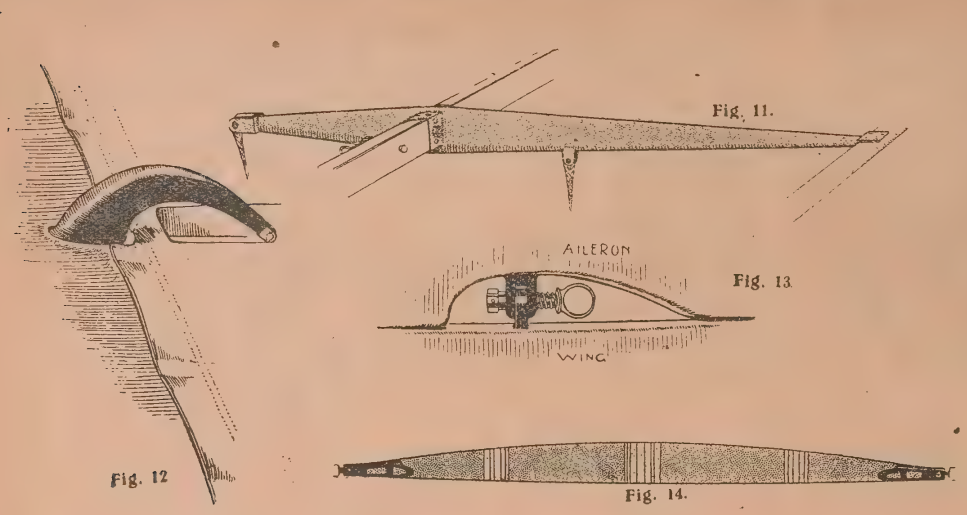


Fig. 11.

Fig. 12

Fig. 13

Fig. 14.

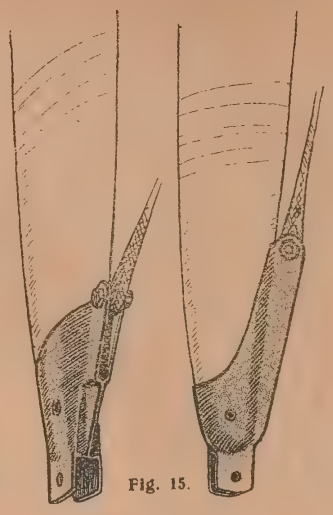


Fig. 15.

the number and shapes of the bulkhead in the C.V. machine, and incidentally reveals the shape of the fuselage. The C.VI. type has generally the same arrangement, but the third and fifth bulkhead are no longer vertical in this model, and the tail part of the body has been strengthened by the insertion of another cross piece.

Although the fuselage of the L.V.G. biplane ends in a vertical wedge, the provision of a centre section for the tail plane gives a cruciform appearance to this part. This is shown clearly by Fig. 21, where the two sides of the tail plane centre section are drawn in thin lines. The 3-ply covering to the fuselage rounds off the joint of body and tail plane in the neat way that is found in so many German aeroplanes. (See Fig. 22).

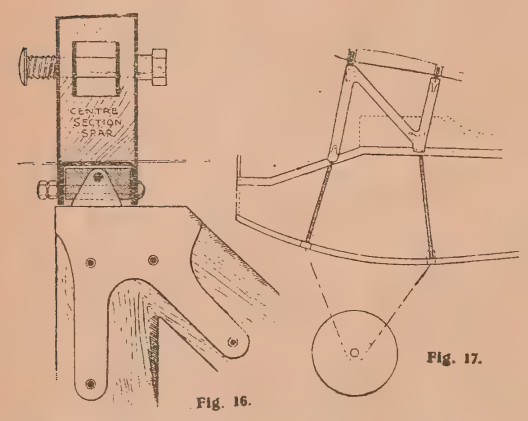


Fig. 16.

Fig. 17.

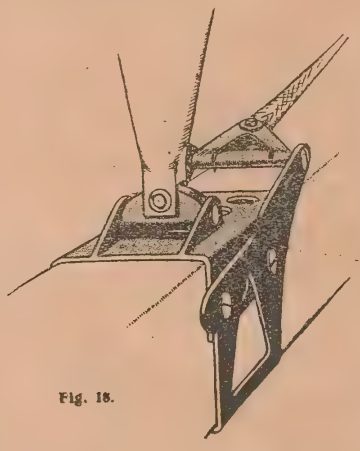


Fig. 18.

Tail.

The shape of the fixed tail planes is shown in the G.A. Drawings. The main box spar (see dotted section in Fig. 20) passes right through the body. The rear spar, to which the elevators are hinged, is of rectangular section wood, hollowed on its rear face to take the steel tube which serves as the elevator spar. The tail is so badly damaged that detailed analysis is impossible, but the fixed tail planes are of wooden construction, with the usual ribs and semicircular leading edge. It will be noticed that the tail plane is not set parallel to the crankshaft line, but is raised through an angle of 5 deg., and it has a symmetrical streamline section.

The elevator, which is balanced and undivided in both models, is a welded structure of light steel tubing, and presents no unusual feature. There is a small protecting horn provided on the tail plane, to prevent damage to the corner of the balanced portion of the elevator—Fig. 23 gives a clear idea of this example of thoroughness.

The tail skids are both of the same general type as that of the Pfalz Scout, i.e., the member is entirely exposed, and does not project into the fuselage. It is of ash, and the upper end is so shaped as to avoid the necessity for any metal link or fitting. Both machines also have a small triangular fin on the underside of the fuselage which serves the double purpose of providing fin area and of adapting the shape of the fuselage to the slope required for the tail skid. (See Fig. 22.)

It will be seen from the sketch (Fig. 24) that the skid of the C.V. machine carries a four-leaved flat spring bolted a little to the rear of the pivot. In the later model this has been discarded. The shape of the lower triangular fin also differs slightly—that of the C.VI. has been simplified and strengthened. The workmanship of the sheet steel angle piece on the C.VI. machine gives one the impression that it is a "squadron fitting." It is of fairly heavy gauge, and may have replaced a weaker part fitted by the manufacturer.

Undercarriage.

The landing gears of both machines are similar and in general arrangement conform to the practice that is now practically standard. The vee struts are of streamline section, and constructed of fabric-covered wood. The practice of using wood for undercarriage struts is, of course, unusual in enemy machines, but is in conformity with the other struts—interplane and centre section—on this machine.

The major and minor axes of cross section of one of the front struts (and all four, front and rear, are of equal dimensions) are respectively 2 9-32 in. and 4⅞ in.

The upper and lower extremities are capped with steel sockets, which allow of attachment to the fuselage at the upper extremities and at the lower ends serve to connect the two limbs of the vee, and are provided with accommodation for the shock absorber. Figs. 25 and 26 show respectively the component parts of the attachment to the fuselage, and the socket at the lower part of the vee. From Fig. 25 it will be noticed that the ball at the head of the strut beds into a hemispherical socket attached to the fuselage. The lower half of the ball articulates with a curved

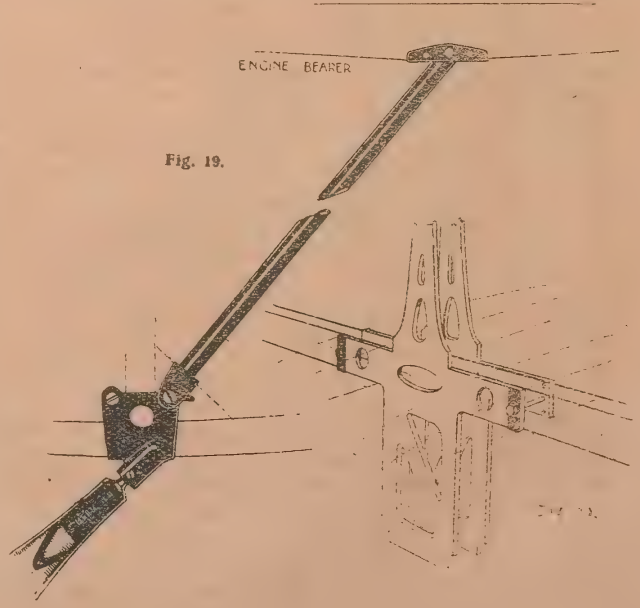


Fig. 19.

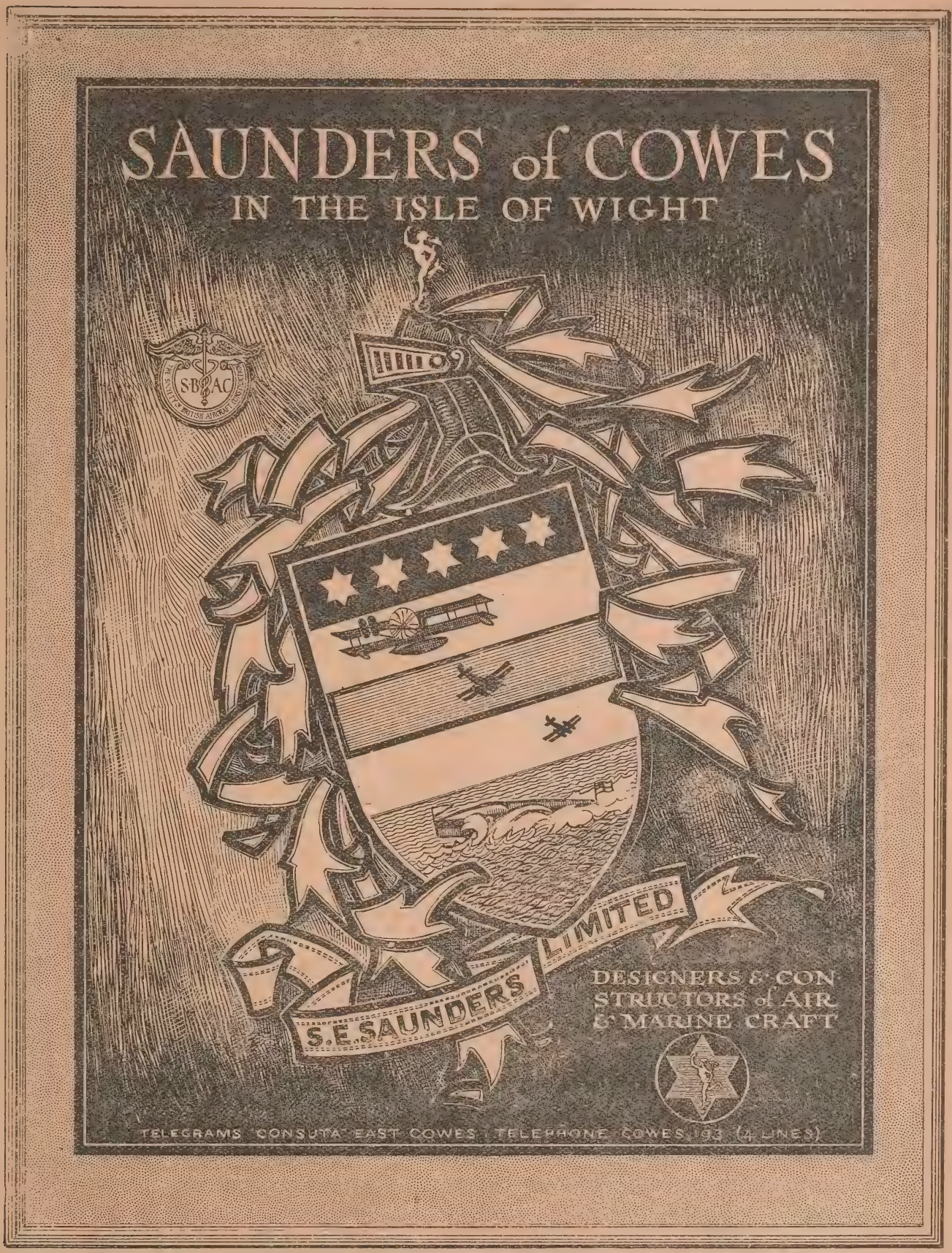
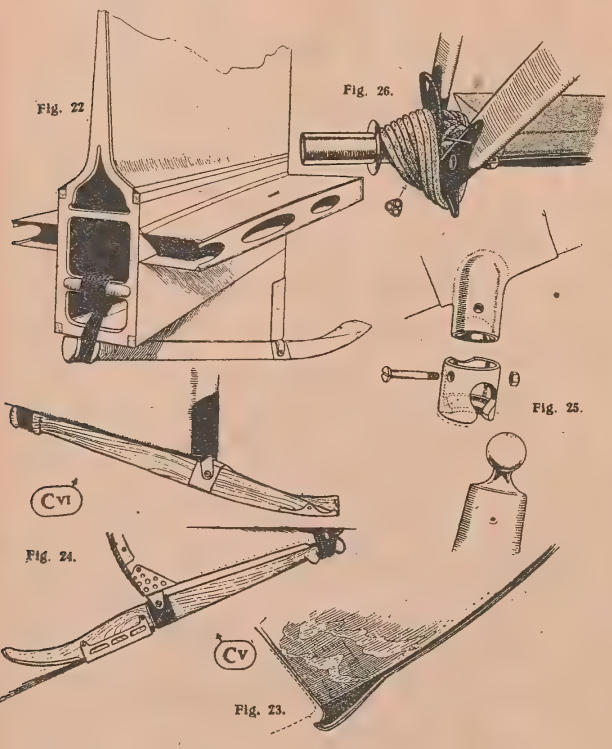

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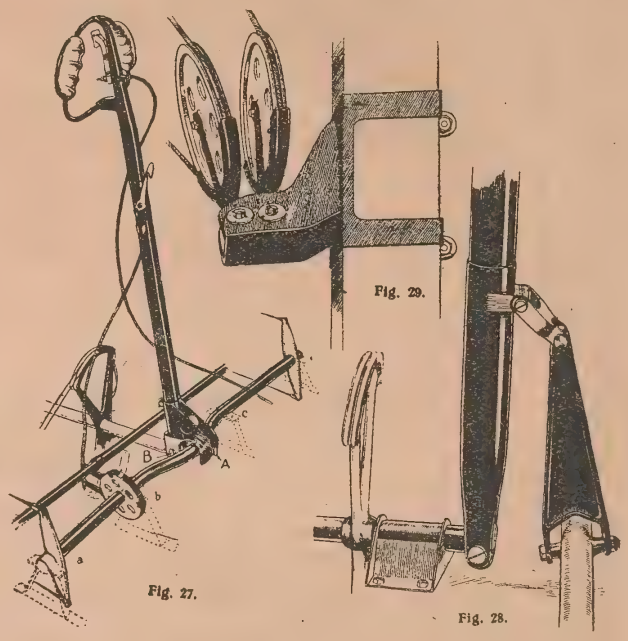


Fig. 21.

surface on the ferrule, and the ferrule next slipped over attachment. In assembling this joint—and this is a matter of seconds only—the ball is first passed through the opening provided on the ferrule, and the ferrule next slipped over the body lug and pinned in place. All four body attachments are of this type in the C.VI. machines, but in the C.V. model the joint was made by simply pinning the ball to its socket, without the refinement of a ferrule.

The shock absorber is of the coil spring type, with three small diameter springs lying side by side, as indicated in Fig. 26. A loop of cable limits the amount of axle travel, and between the lower extremities of the vees is a steel compression tube, of 1½ in. O.D., and behind this lies the axle, which is encased in a 3-ply fairing. It will be noticed that the compression tube is not included in the fairing, and when the axle is raised as the machine





lands, the fairing travels with the axle. This method allows of good accessibility to these components, but is not quite so good an arrangement from the streamline point of view as the common method of allowing the axle to lift out of a fixed fairing.

The schedule of principal weights, given at the end of this report, is of considerable interest as regards the undercarriage.

The wheels are 810 × 125, and the track 6 ft. 7 in. The cross bracing does not start from either front or rear fuselage attachments, but from the front spar joint on the fuselage.

Controls.

As is the case throughout the design, the controls of the two aeroplanes are generally similar, but differ in detail. In the C.V. machine the control lever, at the head of which is the usual two-handed grip, operates two rocking shafts which are perpendicular to one another. The transverse tube, which actuates the elevators, is cranked in the middle and supported on four brackets, marked a, b, c, and d, in Fig. 27, which act as bearings. To

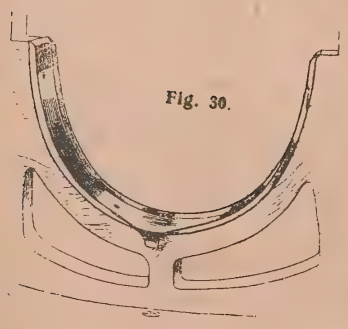


Fig. 30.

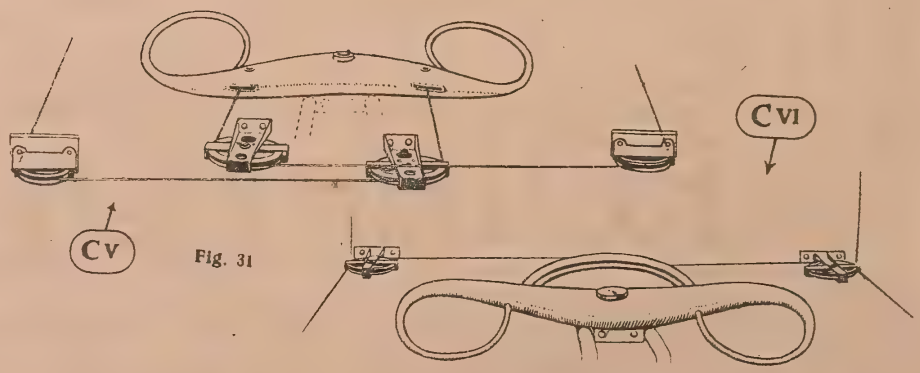


Fig. 31

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Fig. 32.

the middle point is pinned the front half of the jaw which is found on the bottom of the control lever. This pin A always points directly to the centre of the pin B, which passes through the rear half of the jaw and is itself always exactly in line with the bearing of the transverse shaft. This somewhat complicated arrangement allows the transverse shaft to be rotated round axis a, b, B, c, d, and at the same time permits the other shaft to rock on its own bearings. A simple contracting band brake controlled by a Bowden lever and cable serves to lock the elevator controls in any desired position. This brake is found in both types.

The C.VI. controls are rather different, and are shown in Fig. 28, which clearly explains their operation. The naked aileron control cables pass through the lower wing near the rear spar, and run over the aluminium pulleys illustrated in Fig. 29. The upper extremities of these cables are attached to the welded control lever which works in a slot in the upper plane. The differences between the two types in the matter of the aileron lever has already been commented upon.

The rudder bars of the two types are of the same general design, but the problem of leading the cables round the base of the large petrol tank immediately behind the rudder bar is solved in different ways. In the later type a semicircular extension to the rudder bar avoids the necessity for the two extra pulleys and bearings found in the C.V. type. Reference to Fig. 31 will make this point clear.

Engine Mounting and Control.

The 230 h.p. Benz engine is mounted on wooden bearers of rectangular section, 1⅝ in. wide and 3¼ in. deep, supported on the cross bulkheads found in the front of the fuselage. In the C.V. machine there is a steel tubular strut on each side, which is in compression between the rear portion of the engine bearer and the front undercarriage joint (see Fig. 19). As has already been mentioned, the rearrangement of the fuselage bulkheads allows this strut to be dispensed with in the C.VI. model.

The throttle lever is of the familiar ratchet-quadrant type, and in the C.V. machine there is no interconnected throttle lever on the control stick. Although the C.VI. control lever is missing, it is fairly certain that this is true of this type also. Those bulkheads which are likely to receive oil drippings from the crankcase are protected by aluminium strips employed in the manner shown in Fig. 30.

Oil and Petrol Systems.

Both machines have a main petrol tank under the pilot's seat and a gravity tank attached to the upper plane. In the C.V. machine this tank is placed on the upper surface of the port plane, alongside the narrow centre section. The later type has the tank beneath the port upper plane, as will be noticed from the scale drawings. In this case the filler passes through the plane, and has the cap on the plane's upper surface.

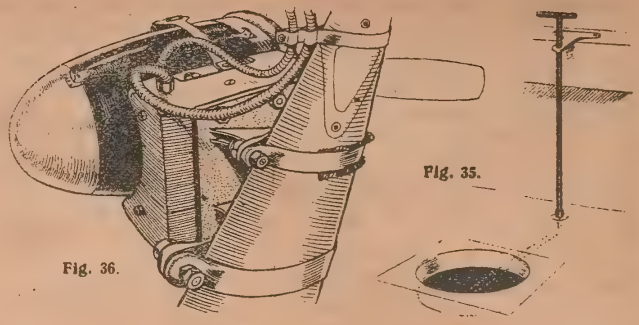


Fig. 36.

Fig. 35.

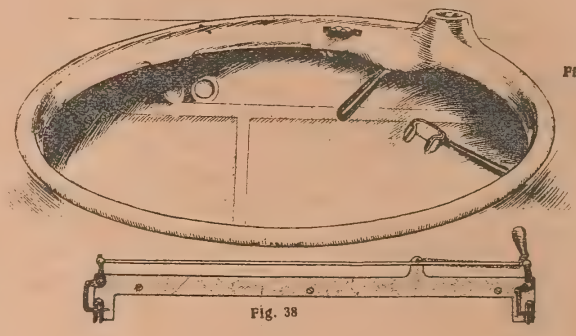


Fig. 37.

Fig. 38

The C.VI. main tank has a capacity of 47 gallons, and the gravity-tank a capacity of 5½ gallons, thus giving a total petrol capacity of 52½ gallons. There is a hand petrol pump which allows the pilot to fill the gravity tank from the main tank, and an engine petrol pump which draws fuel from the main tank and passes it on under pressure to the small cylindrical compartment of the main tank, whence it flows to the carburetter. This is, of course, the usual Benz system, and has been fully reported upon.

The exhaust pipes are of welded sheet steel, and are carried higher than is usual in the C.VI model (see Fig. 32).

Radiator.

The positions respectively occupied by the radiators of the two models are quite different, though both are in conformity with enemy practice. Reference to the scale drawings will make it

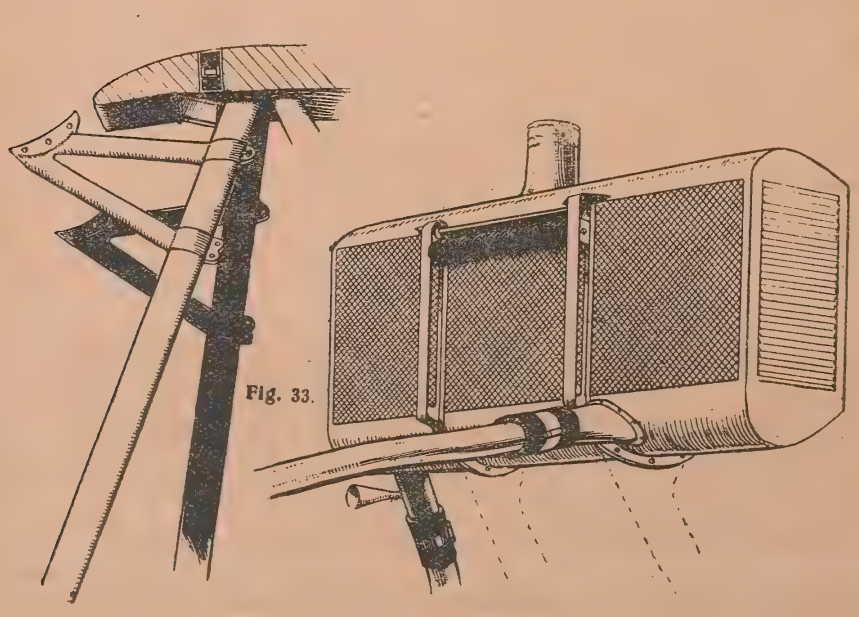


Fig. 33.

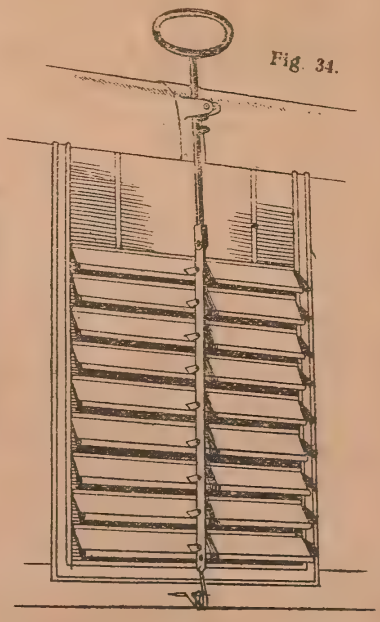
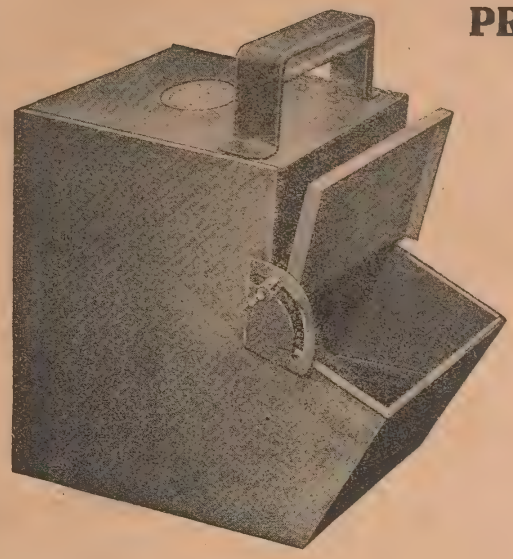


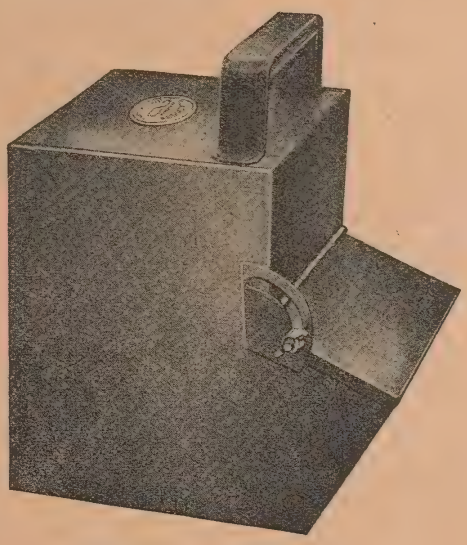
Fig. 34.

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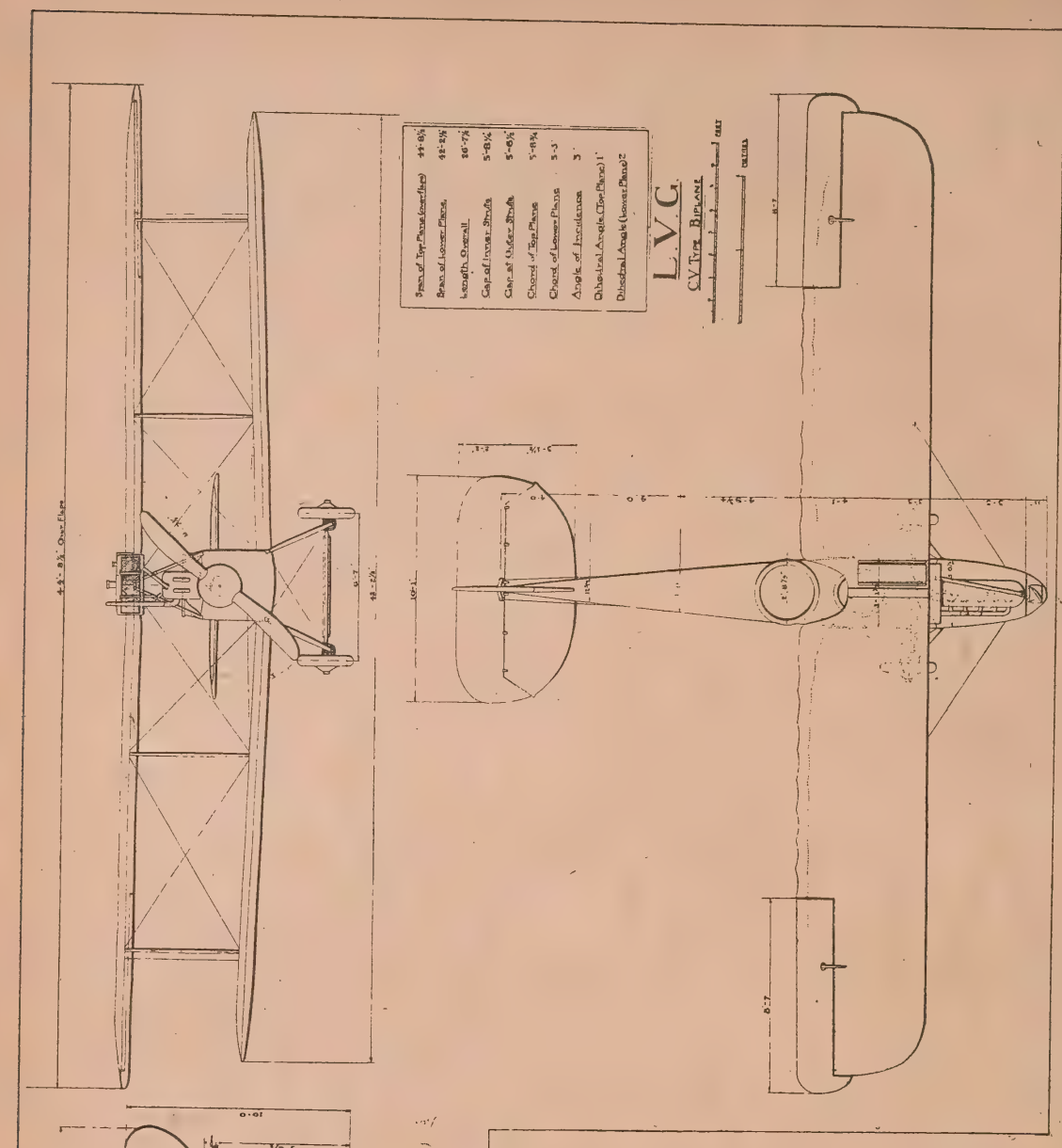
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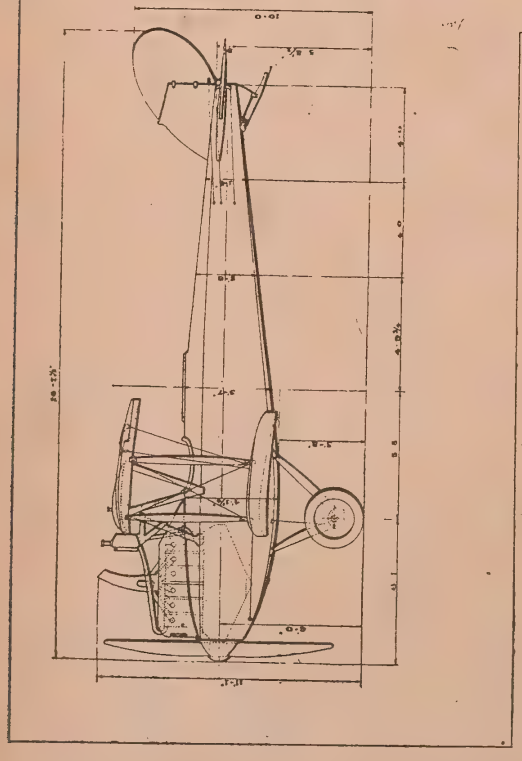
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clear that the C.V. radiator is supported in front of the leading edge of the upper plane on struts clamped to the cabane, while that of the C.VI. occupies the middle part of the centre section and is flush with the curvature. The construction also differs. The vertical (C.V.) radiator is composed of flat vertical films, which are crimped and set "staggered" so that their appearance is similar to that of a honeycomb radiator. The C.V. type has the usual oval section brass tubes running perpendicular to the chord of the wing. Fig. 33 gives a sketch of the earlier radiator, and of its supports. The shutters work on different systems, as will be noticed from the sketches. The vertical shutter of the C.V. machine is of the roller blind type, with cables which operate positively, one to unroll and the other to roll up the blind. This shutter puts out of action approximately one-third of the radiator area. The C.VI. shutter effect is obtained by moving a handle which alters the slope of nine parallel hinged flaps, as illustrated in Fig. 34.

Instruments.

The pilot's cockpit is not provided with a dashboard, but the instruments are distributed chiefly on the left-hand side of the pilot. They comprise the usual Bosch starting magneto and key switch; an oil-pressure gauge calibrated to 4 kg. per sq. cm.; a petrol-pressure gauge to 0.5 kg. per sq. cm.; a Maximall petrol gauge to the main tank, a grease pump, and throttle and ignition levers of the usual type.

The observer's cockpits of both machines are provided with circular camera holes in the flooring, and each hole is fitted with an aluminium cover, but these covers are manipulated differently. The aperture of the C.V. machine is about 9 ins. diameter, and the type of cover is clearly shown in Fig. 35. That of the C.VI. model is 12 ins. in diameter, and is covered simply by an aluminium sheet which slides in parallel grooves outside the fuselage. The C.VI. biplane was fitted with a complete wireless outfit when captured, but of the internal fittings only the aerial and reel remain, and these are entirely standard. The current was obtained from a dynamo attached to the undercarriage strut, which is still *in situ*, though its airscrew is missing. This dynamo is shown in Fig. 36.

The fitting shown in Fig. 37 was found on the starboard side of the C.V. machine; and is obviously a release for some light object. Its precise function is unknown. Fig. 38 shows the C.VI. gun ring, and it will be noticed that the padded clip is not in its usual vertical position.

Fabric and Dope.

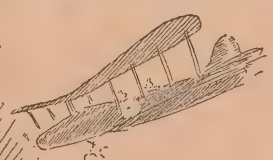
The usual printed fabric with a design of coloured polygons is used, and nothing regarding fabric or painting calls for comment.

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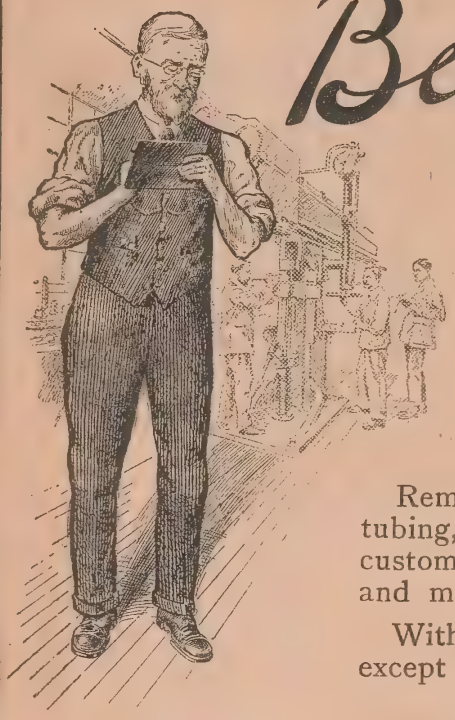
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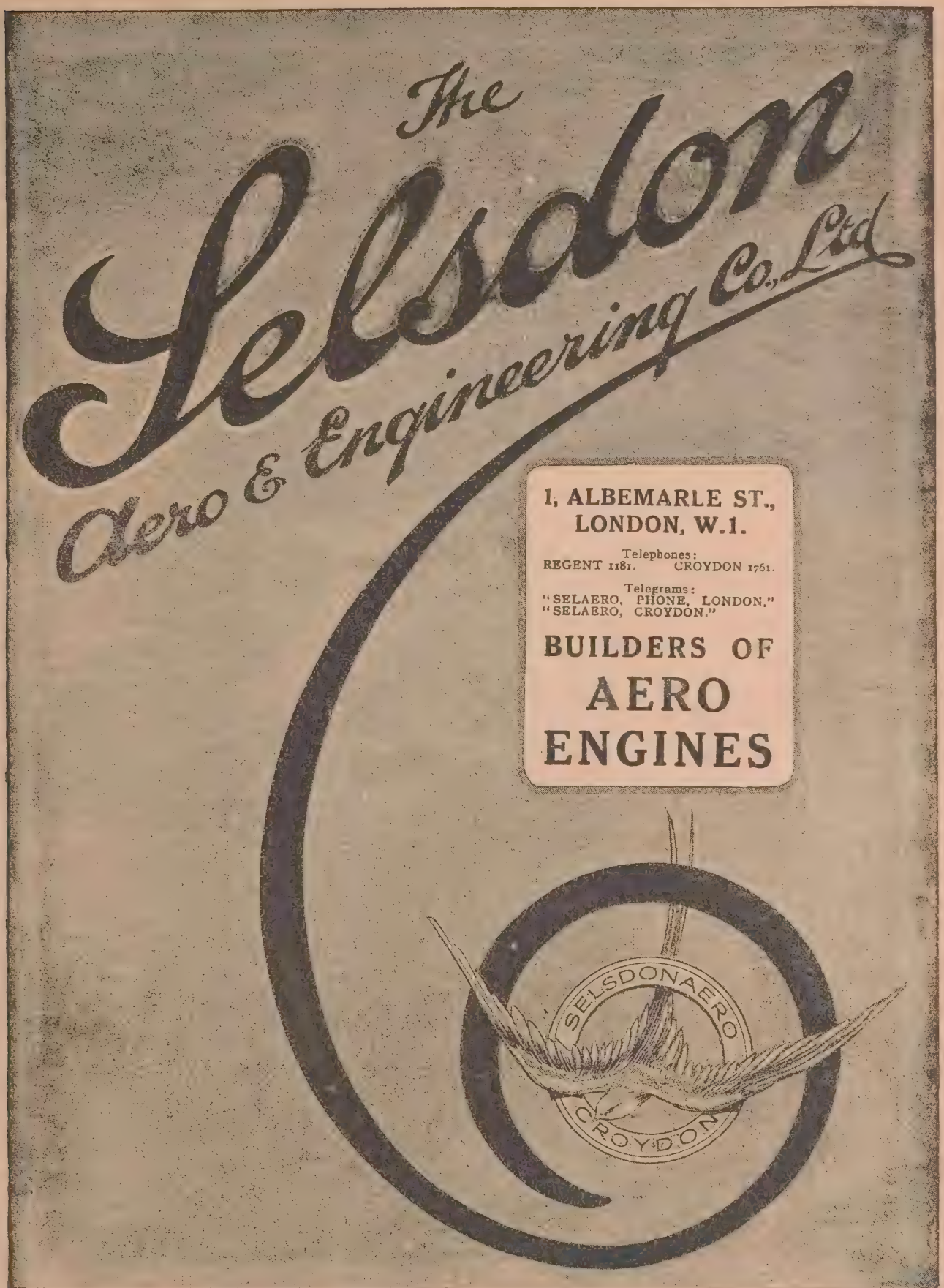
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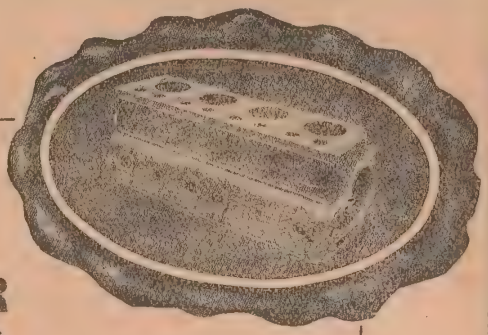
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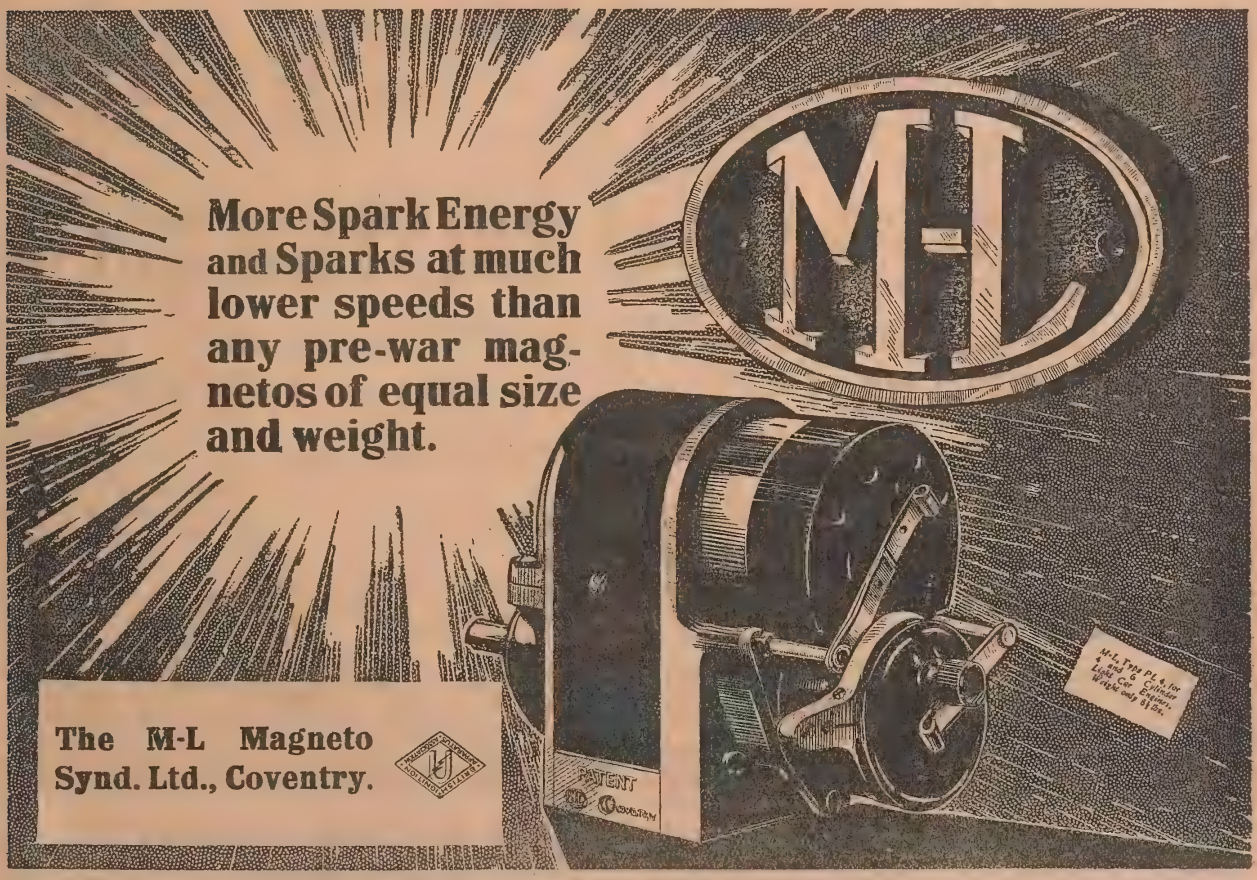
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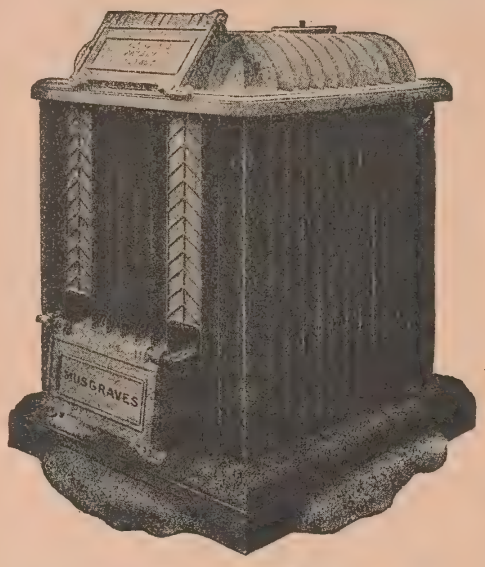


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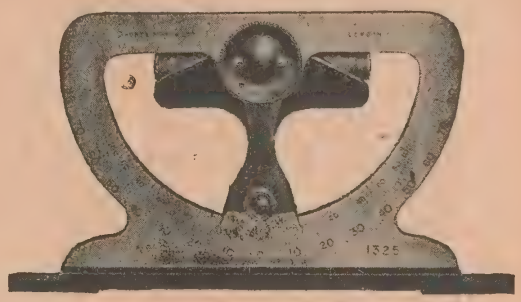
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Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich" Norwich 851.

· Buyers' · Guide.



Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London."
City 1266
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Mendine Co., 3, Arthur Street, E.C.
Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London."
London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast.
Telegrams—"Musgrave, Belfast"
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London."
Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London."
Hop 718.

Instruments—
British Wright Co., Ltd., 133, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London"
Museum 430
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry."
Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6242.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London."
Avenue 995, 996, and 7006.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury."
Oldbury 111 (3 lines)
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London."
Holborn 4959.
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London" Gerrard 226 (2 lines).

Metal Parts and Fittings (continued)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton [illegible]
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds."
Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham."
King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London."
Holborn 410
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."
Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Salleford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast."
Belfast 4033-4034-4035.
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London."
London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham."
Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry."
Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd.
(See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds."
Roundhay 345 (3 lines)
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672
Integral Propeller Co., Ltd. "Aviprop, Hyde, London."
Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich"
Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17.
Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil" Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth.

Radiators— Letchworth 20.
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield."
Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester."
City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch."
Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds."
Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich."
Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton."
Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds.
Leeds 21953.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles— Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury."
Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds."
Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham."
Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham.
East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London."
Regent 1181

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"The Aeroplane" Buyers' Guide.—*continued.*

Sheet Metal Work (continued)

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Solder Manufacturers—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled Cannon, London." City 6342.

Sparking Plugs—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby." Rugby 235.

Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of K.L.G. Plugs. "Kaelgee, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—

Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 490. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Rubery Owen & Co., Darlaston, South Staffs.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Thomas Parsons & Sons, 315 and 317, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—

(Silver Models)—

Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—

Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—

Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.

Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 736.

Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.

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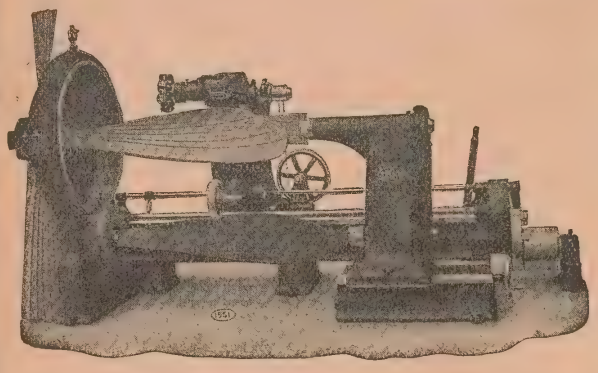
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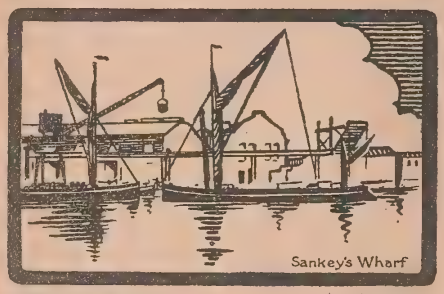
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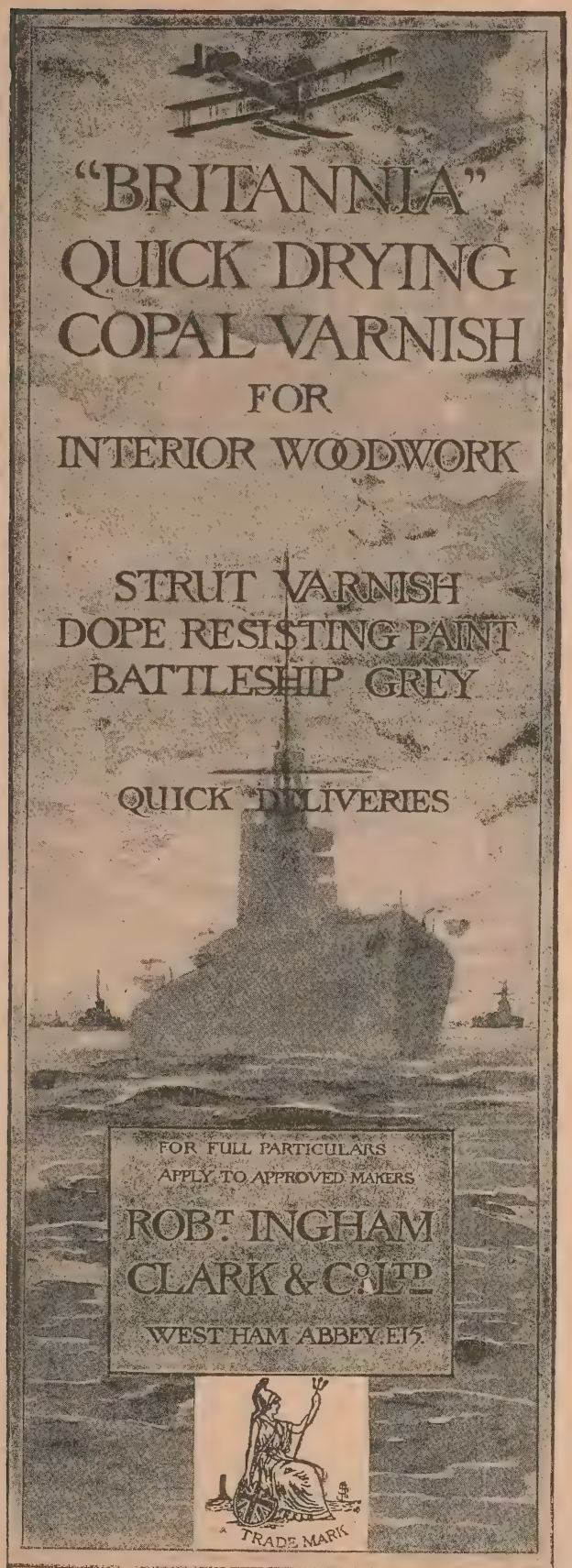
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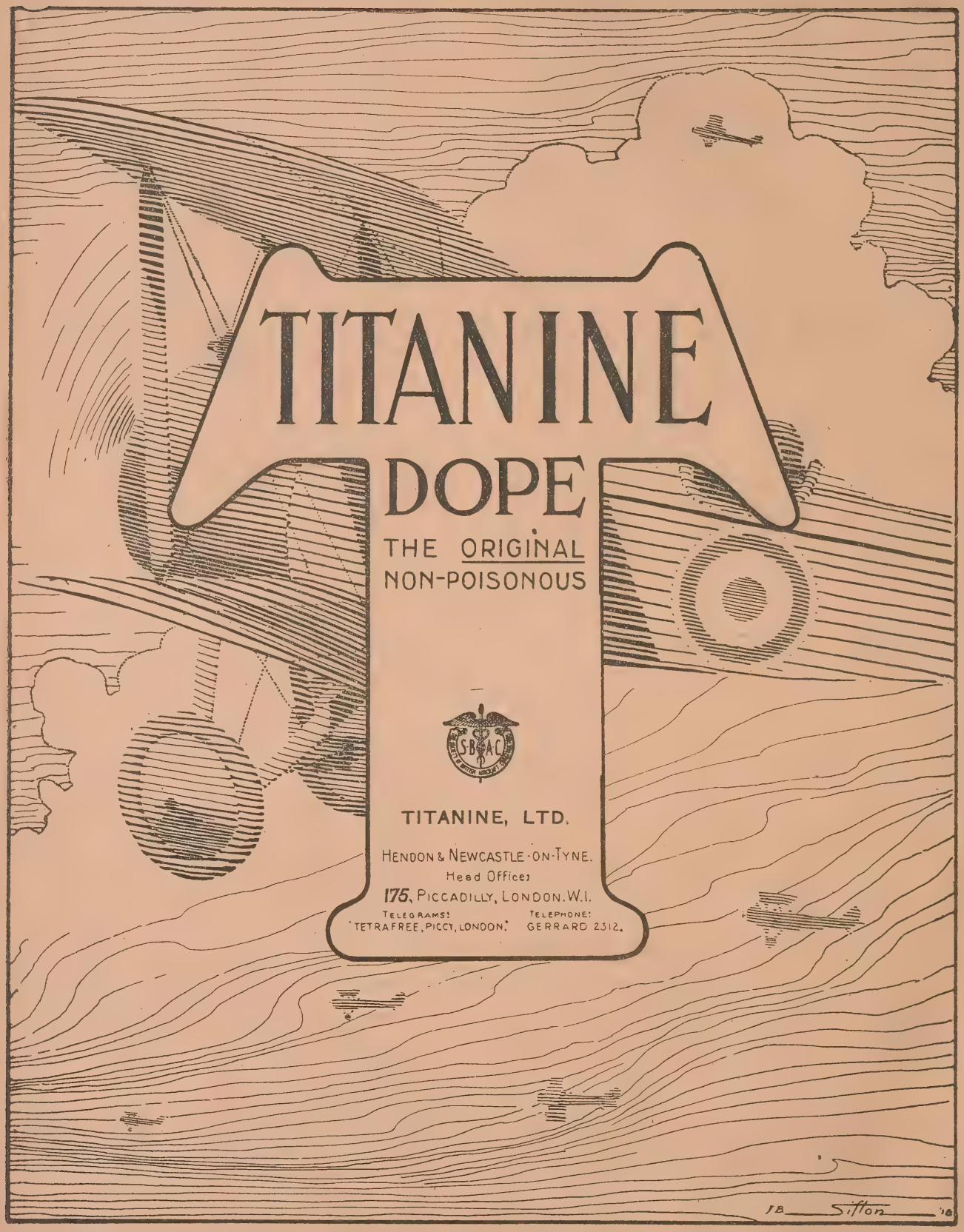
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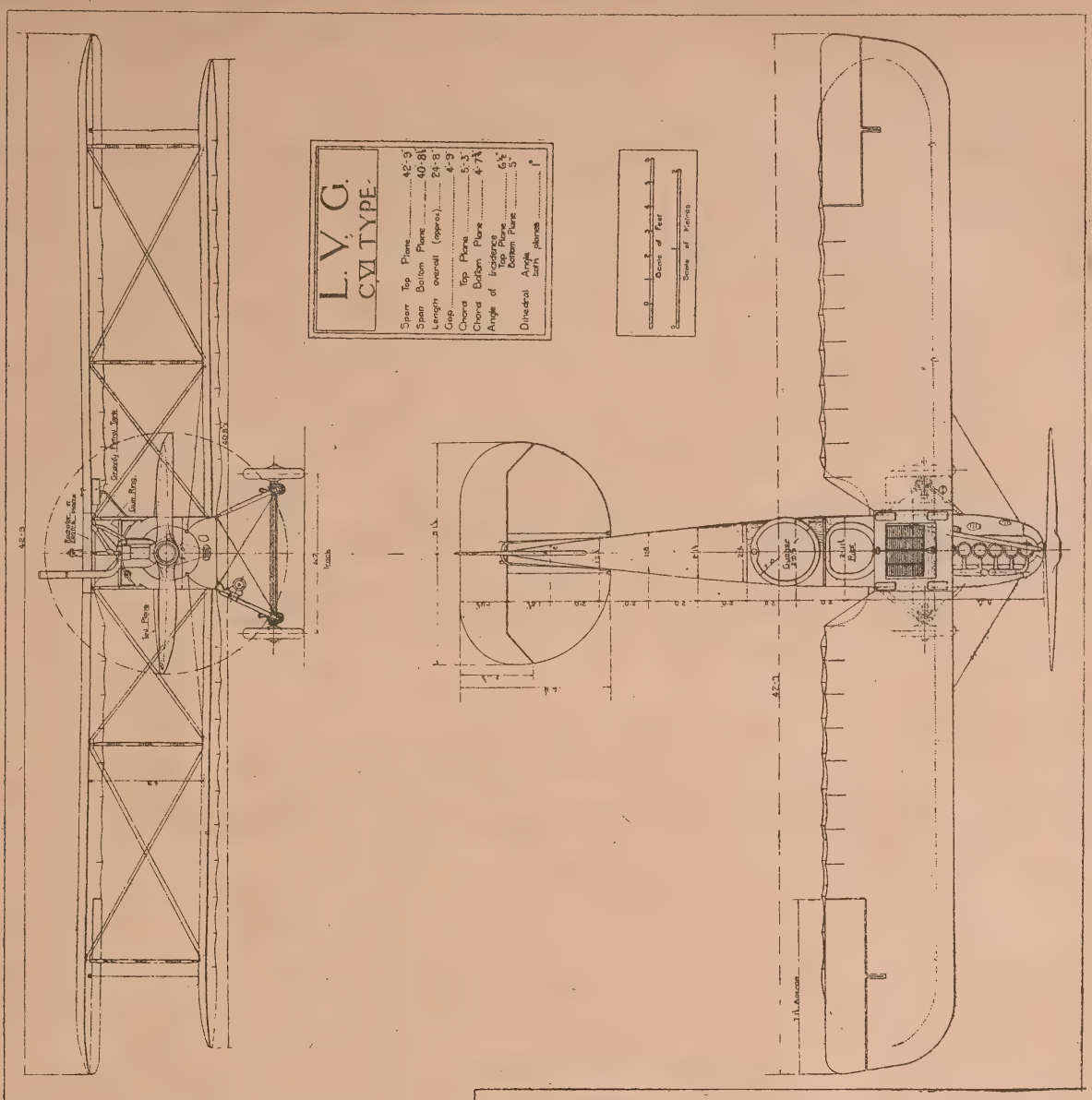
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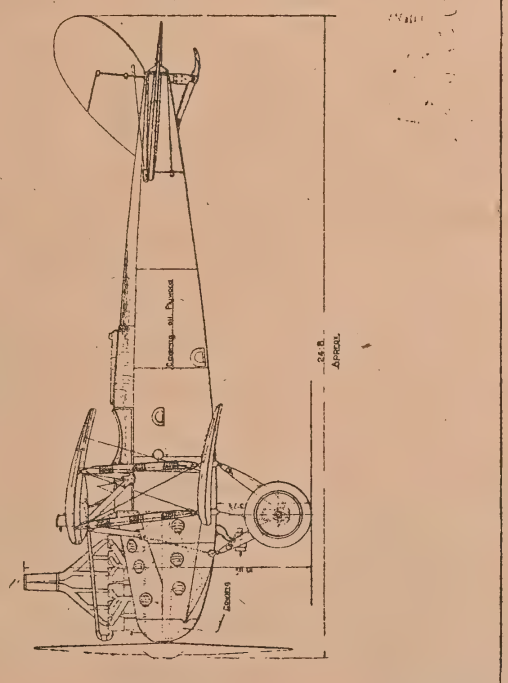
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Upper wing, covered complete (with ailerons)	85	4
Centre section without struts or cable	64	0
Centre section N strut	5	8
Interplane strut, each	3	11
Aileron, covered, each	8	4
Balanced elevator, covered, complete in one piece	14	8
Undercarriage, comprising :—		
2 Vees, bare	29	1
2 Wheels, with tyres	55	8
2 Axle caps, with pins	0	6
2 Shock absorber bobbins	1	4
2 Shock absorbers	17	6
Axle and fairing	23	2½
Compression tube in front of axle	3	0
2 Bracing wires, with strainers	2	0
4 Ferrules	0	10
Undercarriage, complete	132	5½
Tail skid, bare	4	6
Brass oil tank, with 20 ins. copper pipe	9	7
Ammunition magazine (aluminium)	5	0
Exhaust pipe	16	4
Spinner	2	9
Dynamo, without airscrew	23	12

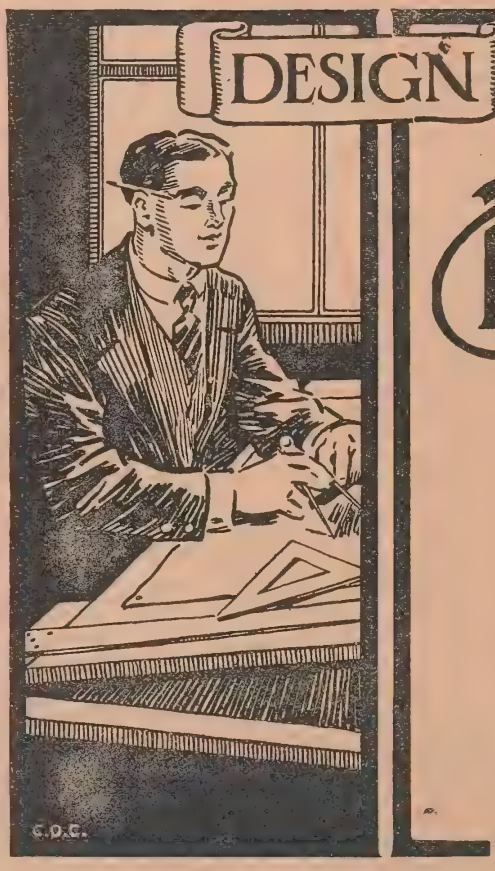
Both of these aeroplanes are at present at the Enemy Aircraft View Room, Islington.

Ap.D. (L.)
J. G. WEIR, Brig.-Gen.,
Controller, Technical Department.

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STRESS OPTICAL EXPERIMENTS.

On Wednesday, Nov. 20th, the second autumn meeting of the Royal Aeronautical Society was held at the Royal Society of Arts, with Major Filon, R.A.F., in the chair.

Major A. R. Low, R.A.F., presented a paper entitled "Stress Optical Experiments," which he did not read, but explained with the aid of diagrams and photographs. A lengthy note on "The Principle of Dynamical Similarity applied to Deformable Elastic Structures," by Major Filon, was appended. This note also was taken as read.

Interesting as Major Low's paper may be, it is of such a highly scientific nature as to be understood only by scientists of a high order, and its reproduction in full in the columns of THE AEROPLANE would therefore not be justified. Also the mechanical difficulty exists of reproducing the lantern slide illustrations which were made from colour photographs resembling geological rainbows or the like.

As was frankly admitted by the lecturer, properly to understand the paper one required to have a knowledge of the refraction of light, which implied a certain knowledge of physics, and one therefore trusts that Major Low will be able some day soon to write an elementary treatise on his subject in words which can be understanded of the multitude.

Properly to précis such an article would be no less difficult than to write the paper, but the writer of these notes, whose knowledge of physics, such as it was, long ago passed into the limbo of Time, endeavours to give hereafter an impression of Major Low's discourse, reinforced by extracts from the paper itself.

The purpose of the paper was to describe a method of examining by optical means stresses imposed on a loaded model aeroplane truss made of an isotropic transparent solid, to wit, xylonite :—

"Sir David Brewster in 1816 discovered that an isotropic transparent solid, such as glass, behaves as a temporary crystal under stress, and when examined in the polariscope between crossed Nicols exhibits the characteristic colours of crystalline plates.

"Since Brewster's day this property has been studied by a number of observers. Clerk Maxwell showed that isinglass jelly would show the colours under stress when in its soft state, and retained them, more or less permanently, when allowed to harden under strain. To him is due the first attempt to apply this effect to the exploration of the stress system in the plane of a strained plate; experimental investigations of this nature were afterwards carried out by Carus Wilson, by Prof. E. G. Coker, F.R.S., and by the present writer.

"Neither glass, however, nor isinglass jelly forms a suitable material for the investigation by this means of stresses in engineering structures. Glass does not lend itself readily to the construction of such models as regards shape and jointing. Isinglass jelly is altogether too soft. Prof. Coker, however, discovered that celluloid, or more properly, xylonite, possesses this stress optical property in a very high degree. This substance is easily worked and cut to any required shape, and will take the necessary fittings without being damaged. The method at once becomes a practical one from the engineering standpoint."

THE THEORY OF THE STRESS OPTICAL METHOD.

"An elementary theory can be given as follows :—Consider a rectangular block of transparent material under uniform tensions (P), parallel to one set of edges and (Q) parallel to another set of edges.

"Let light be passed through the material in a direction perpendicular to both stresses 'P' and 'Q.' Then it is found that the light, on entering the material, is broken up into two portions. One is polarised in the direction of the stress 'P,' the other in the direction of the stress 'Q.'

"These two light waves travel through the material at a different rate, so that, on emergence, one of them is retarded with respect to the other. If we call 'r' the relative retardation, then it is found that $r = Ca(P-Q)$ where 'A' equals the thickness of the material traversed, and 'C' is a co-efficient depending only on the nature of the material and the wave length of the light.

"So far the most recent investigations confirm the accuracy of the above law up to the highest stress that the material can bear. This is certainly the case as regards glass. As regards xylonite, it has not so far been possible to investigate the law with the same order of accuracy, but what investigations have been made confirm the rule that the relative retardation is strictly proportional to the difference of the two stresses.

"It is important to note that the relative retardation is proportional in every case to the difference of the stresses, and not to the difference of the strains. Thus the method will not lead to a determination of the strain, or curvature, unless the material is not strained beyond the elastic limit, in which case the stress is proportional to the strain. On the other hand, a material may have bad permanent strain, but unless this is accompanied by a corresponding permanent internal stress, there is little or no optical effect. The method thus provides a direct determination of the actual tensions and pressures occurring, and enables us to explore the material dynamically—whereas any method of deflections, such as must be used with a model of opaque material, only gives us the visible strains from which the stresses are inferred by a process which lacks validity as soon as the elastic limit is passed.

"Returning to the consideration of the light emerging from the block, it appears that if the relative retardation of the two waves is a whole number of wave lengths, they will emerge in the same phase in which they entered, and, on re-combining, the effect will be the same as if the block had not been present.

"Now a Nicol prism is a block of Iceland spar, which only transmits light polarised in a particular azimuth which is called the axis of the Nicol prism.

"If then two Nicol prisms are placed one behind the other with the axis perpendicular, the second cuts off all the light which is transmitted by the first, and on looking into the second prism the field is dark.

"If, however, a crystalline plate, or a piece of xylonite under stress be now introduced between the Nicols, the light is in general restored when the directions of stress are different from the axes of the Nicols, the light transmitted by the first prism being depolarised; but if for any given kind of homogeneous light the stressed xylonite produces a relative retardation of a whole number of wave lengths we have seen its presence does not affect the character of the transmitted light. Thus, light of this particular colour will be extinguished in the field."

The net result of this phenomenon is that light transmitted through the first Nicol, then through the xylonite, through the second Nicol and focussed by a lense onto an opalescent screen, will, if the xylonite be stressed unevenly, show as a series of bands of colour corresponding to the stresses sustained by the different parts of the xylonite, the bands showing as irregular waves, varying with the stresses. The observer witnesses the spectacle of his miniature spar or other member under stress projecting its image on the screen in a kind of corrugated rainbow which reduplicates itself under heavier loadings with successive groups of colours.

By the inspection of these colour lines a comparative observation of stress variations can be made, but a quantitative examination can be achieved by placing a piece of xylonite under a known tension in immediate juxtaposition with the xylonite spar under test, but with its length vertical as opposed to the horizontal position of the miniature spar. A comparison of the known stress with the unknown, with certain necessary adjustments and corrections, makes it possible to calculate the stresses on the particular parts of the spar under examination.

Major Lowe claimed that the system of testing had shown great accuracy, and tendered the following figures in support of his view :—

Range of stress. Lbs.	No. of observations.	Mean probable proportional error.
100-500	95	0.057 (2)
500-1000	103	0.032 (3)
1000-1500	60	0.031 (4)
1500-2200	24	0.045 (1)
100-2200	287	28.5 lbs.

Without doubt this system of testing will be of considerable value when used side by side with the ordinary methods, and even if it cannot ultimately be employed as the sole method of calculation it should prove invaluable as a check on a designer's deductions.

The following took part in the discussion :—Colonel de Villamil, Lt.-Col. Cave-Brown-Cave, Maj. Taylor, R.A.F., Capt. Hill, R.A.F., Miss Hudson, Stress Department, R.A.F., Professor Coker, Mr. Guest, Mr. Howard Flanders, Mr T. W. K. Clarke, Air Mechanic, and the Chairman. Most of the discussion consisted of remarks of an elucidatory nature, and of questions which were briefly answered by the chairman.

THE CONTROL OF EMPLOYMENT OF MUNITION WORKERS.

The Ministry of Munitions have issued an order revoking the order of December 12th, 1917, which prohibits the employment of certain classes of Munition Workers on Non-Munition work. It is now in order for firms to employ on non-munition work any workmen who, since the passing of the Munitions of War Act in 1917, have been employed on, or in connection with, the following Munition work :—

The manufacture or repair of Arms, Munitions, Ships, Vessels, Vehicles, Aircraft, or any other articles or parts thereof in any way adapted for the use of War and of any Ships, Vessels or any parts thereof certified by the Board of Trade to be necessary for the successful prosecution of War, and any materials, machines or tools required for any such manufacture or repair of the materials in any class specified in an order of the Ministry as being required for any such manufacture or repair.



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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the Current Official Patents Records :—

PATENTS APPLICATIONS.

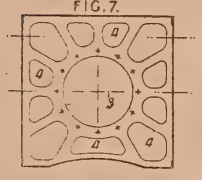
Adam, Grimaldi, & Co. Aeroplanes. No. 18506. Nov. 12th.
Blackburn Aeroplane & Motor Co. Rudder bars for aeroplane flying machines. No. 18580. Nov. 13th.
Calthrop, E. R. Grommet. No. 18782. Nov. 15th.
Calthrop, E. R. Grommet. No. 18783. Nov. 15th.
Calthrop, E. R. Aeroplanes, etc. No. 18784. Nov. 15th.
Dadd, F. E. Floats for hydroplanes, etc. No. 18469. Nov. 11th.
Horsley, E. C. Bomb-sights. No. 18796. Nov. 15th.
Lloyd, H. G. Airships. No. 18461. Nov. 11th.
MacLaren, W. D. Internal-combustion engines for aircraft. No. 18758. Nov. 15th.
Norman, F. Device reproducing actual sensations of flight in aeroplane, etc. No. 18598. Nov. 13th.
Regent Carriage Co. Aeroplanes. No. 18770. Nov. 15th.
Regent Carriage Co. Propulsion of aeroplanes. No. 18771. Nov. 15th.
Ritchie, T. M. Airships of trilobe, etc., section. No. 18630. Nov. 13th.
Ritchie, T. M. Airships of non-rigid and semi-rigid type. No. 18631. Nov. 13th.
Schurr, A. E. Wings for aeroplanes. No. 18821. Nov. 16th.
Short, H. O. Aeroplane flying-machines. No. 18581. Nov. 13th.
Sissons, E. A. Copying-machine for shaping aircraft propellers, airscrews, etc. No. 18557. Nov. 13th.
Stubbs, D. H. Clinometers for aircraft. No. 18793. Nov. 15th
Tunmer, G. N. Parachutes. No. 18824. Nov. 16th.

COMPLETE SPECIFICATIONS, ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER DEC. 5TH, 1918.

120,434. Nov. 8th, 1917. Pugh, R. Apparatus for supporting stretchers or beds in ambulance vehicles, trains, ships, or aeroplanes.
120,450. Nov. 15th, 1917. Blackburn Aeroplane and Motor Co., and Booth, H. Construction of fuselages, boats, or floats, particularly applicable to flying-machines.
120,452. Nov. 15th, 1917. Murray, J. J. Aeroplane constructions.
120,463. Nov. 26th, 1917. Stevenin, L. A. Universal single-handed manual control, applicable to every aeroplane and airship.
120,464. Nov. 26th, 1917. Scoble, W. A., and Rogers, F. E. Range-finder for use from aircraft.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

119,251. Aeronautics. WALKER, C. S., The Limes, Roehampton Lane, Putney, London.



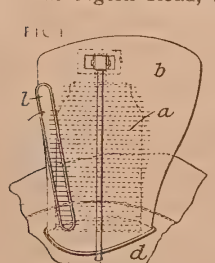
FRAMEWORK.—Sheet-metal frame members for use in aircraft are provided with bulged, fluted, or corrugated portions to strengthen them. Fig. 7 shows the front plate of an aeroplane body having a hole 3 for the passage of the engine shaft. The plate has bulges 4 arranged as shown and is flanged at the edges. Holes may be formed in the bulges for lightness. Where flutings or corrugations are formed they do not extend to the edges of the plates.

119,179. Clinometers. EVANS, A., Plasnewydd, Cross Inn, Llanon, Aberystwyth.



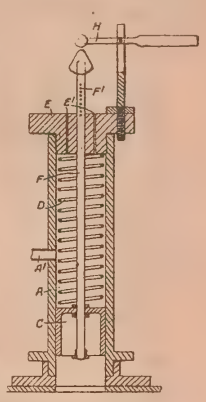
A clinometer for use on aircraft comprises a glass ball *a* of spherical or oval form and one or more tubes *c* extending therefrom. The ball and tubes are partially filled with liquid and are graduated by horizontal or radiating lines or combinations thereof.

119,280. Internal-combustion engines. CUTHBERTSON, H. S., Packington Road, Ashby-de-la-Zouch, Leicestershire.



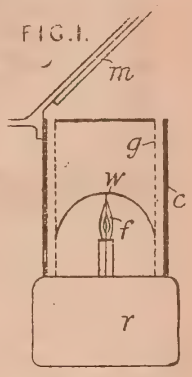
CASINGS; CYLINDERS, COOLING.—Each cylinder of an aircraft engine is enclosed by a casting of streamline form or section in order to diminish air resistance. The invention is illustrated as applied to a radial-cylinder engine, which may be stationary or rotary. In the latter case, the casings *b* are of slightly twisted form, the axis of any given section being in the direction of the resultant of the speed of rotation and the flight velocity of the machine. The casings may be provided with slots *l* for the admission of air for cooling the cylinders, the air escaping through a conoidal central casing *d*, to which the casings *b* are secured. The casings may be of copper, aluminium, etc., and the cylinders *a* may have cooling-fins or a water-jacket. The casings may be adjustable in accordance with changes in the speed of the machine, the adjustment being effected by means of a control band having rack teeth engaged by a hand-actuated pinion; the control band extends around the central casing *d* and is bolted to the base-plate of each casing *b*, the base-plate being connected to the casing *d* by a pin-and-slot connection allowing a limited rotation. When the casing *d* overlaps the fixed part of the machine, a fixed ring is provided to prevent the outward creep of oil.

119,054. Pressure gauges for tanks. THOMPSON, A. D., Hill Crest, Merry Hill, Bushey, and GREEN, W. N., 32, St. John's Road, Watford, both in Hertfordshire.



An indication of the perforation by a bullet of a tank, which may be the petrol tank of an aircraft or other vehicle used in warfare, is given by a gauge affected by the resulting momentary change of pressure. The rod F of a piston-and-spring pressure gauge A, C, D fitted to the tank is shaped at its outer end for engagement with a trigger device H adapted to complete and maintain an electric circuit including an indicator, a coloured-lamp signal, a moving signal which must be arrested by the pilot, etc., or a mechanism such as that described in Specification 17511/15 for sealing the leak in the tank A relief or safety valve may be provided, or excess pressure relieved through an aperture A^1, compression above the piston being avoided by passages E^1. Holes F^1 are formed in the piston-rod for an adjustable stud.

119,308. Clinometers. CAIRNS, A., 22, Bessborough Road, Oxton, Birkenhead.



The vertical is determined by the flow of a light fluid passing through a heavier medium. In the form shown, a reservoir *r* packed with absorbent material soaked in paraffin feeds a flame *f* above which are mounted cross wires *w*. The flame and cross wires are viewed in a mirror *m*. The flame is enclosed in a gauze cylinder *g* with a mica window, and a draught excluder *c*. The indicator may also consist of bubbles of air passing through a liquid.

QUEENSLAND TIMBER WEALTH.

A writer on Queensland timber says :—"We have just started to use blackbutt (New South Wales started about 20 years ago); we are also starting to use crow's-foot elm, spotted gum, and other timbers for axe handles. We are now making our own fruit cases out of pine tops that were previously left to waste. The London Air Board has just decided that Queensland maple is the best timber in the world for airship propellers.

"We are constantly getting inquiries for timber to replace the imported article for the purpose of making saddle-trees, clothes pegs, brushware, etc.

"Recently a large sale of secondary timbers was made on Fraser Island—timbers not previously used. Negotiations are now in progress and are likely to culminate successfully for the establishment in Queensland of a brushware factory capable of using half a million feet of timber a year—timber hitherto classed as useless.

"Also from three other hitherto useless trees we are now providing the brewery trade in Queensland with a bark to supply beer heading at about one-fifth of the cost of the imported article. The bark now being utilised for putting a heading or froth on beer was from three small varieties of Queensland scrub trees that had not hitherto been regarded as of any use."

RECONSTRUCTION IN EAST AFRICA.

The following letter, which appeared in the "Times" of Nov. 20th, may be of interest :—

Sir,—Having served for three years over the greater part of British and German East Africa, I had a favourable opportunity of studying the country. I can safely say that for fertility and cheapness of the soil, for low cost of labour, for climate in the highlands, it cannot be surpassed. Coffee in four years gives a profit of 100 per cent. Flax gives a handsome return in six months. I suggest a capital of not less than £500, and Government land east of Mount Elgon. I shall be glad to give further advice to soldiers.

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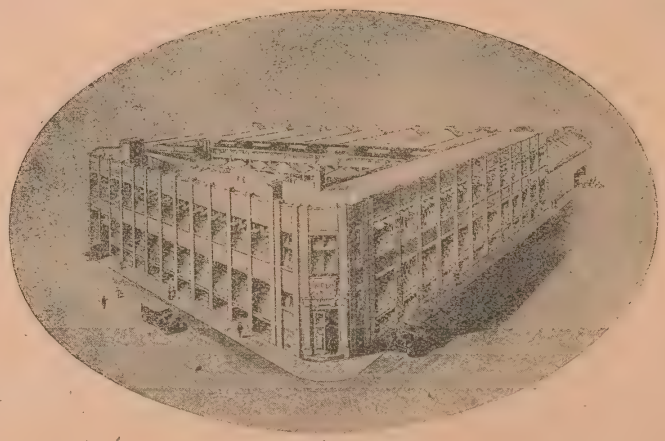
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COMMERCIAL AERONAUTICS

A SUGGESTED PRE-WAR CONFERENCE.

By "Medway."

The rapidity with which commercial aeronautics will materialise after the conclusion of peace depends very largely on the efficacy of the means adopted for propaganda and educational work among the members of the general public and also in official quarters. The view of the writer is that very much, if not absolutely everything, depends on whether the Empire overseas can be brought to a quick realisation of the immense new possibilities opened up by the commercial use of aircraft.

Ministers and permanent officials in practically every department of every Government of the Empire must somehow or other be got to think seriously on this subject. Once serious thought is given to it, provided this thought has the backing of a little sound knowledge of fundamental facts, the desired consequences are bound to follow, unless the official is *so* official in his outlook that nothing in heaven or earth will move him.

From this point of view, then, the problem is to put the official into such a position that he has *got* to think about commercial aeronautics and report to his Department upon the subject from its own particular point of view. Equally, the Minister who has got to do the talking in his Parliament, wherever it may be, must be made to think a little and to absorb a good deal from people who have thought a lot. The Parliamentarian, if he is any good at all, is adept in the art of sucking in raw material in a few minutes and subsequently squirting it out in a flood of grandiloquent verbiage spread over a space of a few hours. His job consists largely of giving the impression that he is an expert in a subject of which he knew nothing the day before yesterday. Either he, or somebody at his elbow, must be primed to produce the necessary stream of oratory which will pledge his Department to progressive action.

Now, from this point of view, our problem is to organise something or other into which the official and the Parliamentarian will be so far drawn as to produce the right effect upon this mentality. I suggest that we are not without a valuable precedent, which we might follow primarily for this purpose, and bearing in mind also the secondary purpose of producing a reflex effect on public opinion, as exemplified by the average reader of the average Parliamentarian utterances.

Concerning Motor Transport.

A year or so before the war there was organised a conference for the purpose of discussing matters connected with motor transport. The organisation was in the hands of a Committee representative of the various motor clubs and institutions and also of the Governments of the various parts of the Empire Overseas and of certain Government Departments at home. In support of this Executive Committee, there was a strong list of Vice-Presidents, including half-a-dozen Secretaries of State and the High Commissioners of the Overseas Dominions. Finally, proper status was given to the whole movement when H.R.H. Prince Arthur of Connaught consented to become President of the Conference.

With the organising body formed on right and strong lines, the work of securing Overseas representatives of the Conference did not prove particularly difficult. Thus, to take one example alone, the representation of India included the accredited nominees of the Indian Office, the Government of India and the Army Department, the Director of Government Railways, the Department of Posts and Telegraphs, and the Railway Board of India, the Chambers of Commerce of Bombay, Bengal, Upper India, Madras, and Burma, and certain representative municipalities. All the Self-governing Dominions were similarly and fully represented. The list of delegates at the Conference was an imposing one, and gave quite the right impression when the attention of the general Press was called to the movement.

The consequence was that the proceedings of the Conference were reported at considerable length in all the leading daily papers. Its deliberations were given prominence not only in this country but in all parts of the Empire. The delegates in most cases were, of course, responsible for reporting subsequently to the bodies which they represented. In some cases, at least, these reports are known to have had good effect.

At an Opportune Time.

The Conference was timed to run concurrently with an exhibition of commercial motor vehicles at Olympia. Some of its meetings were held there, in order to insure that delegates should see what Great Britain had to offer them in the way of motor transport.

It should be noted that the success which attended this Conference was not materially reduced by the fact that motor transport in 1913 was no new thing, but was already fairly well established all over the world.

Concerning Commercial Aeronautics.

Supposing that a Conference on somewhat similar lines were organised in connection with commercial aeronautics, there is every reason to suppose that an even more representative attendance would be secured with the active assistance of an even larger number of heads of Government Departments and Governments throughout the Empire.

No Government or Department could admit that it did not want to learn anything on this subject or pretend that it already knew all it wanted to know. Moreover, the general Press would be far more deeply impressed with the interest of commercial aeronautics than with that of motor transport, which is vastly less spectacular and appeals in a much smaller degree to the imagination. The reports of speeches made by distinguished men and papers read by experts at an Imperial Commercial Aeronautical Conference would go out to the Press in every part of the Empire and would be given great prominence. The private reports of official representatives would go back to Ministers and Permanent Secretaries.

Probable Difficulties.

It is safe to assume that many of the representatives would be sceptical when they arrived, and very fairly convinced by the time the experts had done with them. They would go back and tell their own people that this was a serious movement which they must for their own credit treat seriously. Ministers must be prepared to answer questions as to why they are not taking action. They must pick up at any rate a superficial idea of the subject and be able to talk about it in public. The papers which reported the Conference would force their hands in the direction of action, and altogether I feel convinced that so much would be written and so much talk would be started that quite a good deal would necessarily be done.

Practical Demonstration.

As regards the making of some arrangements in connection with the Conference for familiarising delegates with the actual productions of the British industry, I suggest that it would be well to adhere to the main principle of our precedent, but to diverge as regards details. An exhibition of commercial aeroplanes would be nothing like so effective in this connection as a well-organised series of practical demonstrations. Every delegate should be given an opportunity of taking a short trip in a safe weight-carrying machine. Substantial loads should be taken up to show the ease with which they can be raised and the clear space necessary both for starting and for alighting.

There should be a practical demonstration of the carriage of mails accompanied by exhibitions indicating the accuracy with which it would be possible to drop mails, packages, or other suitable goods without the aeroplane actually alighting. Possibly more fragile articles would also be dropped with the assistance of parachutes. Other demonstrations will naturally suggest themselves, the underlying idea, of course, being a complete absence of stunt flying and a demonstration of the safety, stability and punctuality of the aeroplane as applied to the regular carriage of goods and passengers.

Photographs of these demonstrations would, I think, be well received by the illustrated Press throughout the Empire. Altogether, I suggest that the cost of organising a conference on the lines proposed would be absolutely trivial compared with the solid value which would accrue in the shape of the formation of opinion in those quarters in which it is absolutely essential that an educated opinion should be formed.

AERIAL COACHES TO PARIS.

By "Medway."

The announcement in the Press to the effect that Mr. Holt Thomas means to get an aerial passenger service between London and Paris started at the earlist possible moment is of considerable interest. The arrangements are in the hands of Aircraft Transport and Travel, Limited. The terminal points are the Ritz Hotel in Piccadilly and the Ritz in Paris

Allowing for half an hour's car journey between the terminal points and aerodromes, the whole journey is timed to take three

and a half hours. Tickets are already obtainable and passengers will be given precedence according to the numbers on their tickets. It has been stated that the aeroplanes to be used at first are capable of carrying a useful load of not much less than thirty cwt. and that the fare is to be fifteen guineas. This is presumably the return fare.

In the paper which Mr. Holt Thomas read some time ago, in the course of which he went into details about a London to Paris service, the cost of the single journey per passenger was worked out at £3 15s., using aeroplanes with a somewhat smaller carrying capacity than the type now indicated. Thus, the fifteen guineas fare for the return journey should show a very good margin of profit, since it can be safely assumed that the machines will always run with a full complement of passengers.

The Proper Perspective.

Interesting as this proposal is, and valuable as it should prove for general educational purposes, it cannot be regarded as real commercial aeronautics. The use to which the machines will be put will bear the same relation to commercial aeronautics as the coach or motor char-à-banc bears to the goods train and the motor lorry.

If we take the legal classification of vehicles as a basis, we find that the commercial vehicle is considered to be one "constructed or adapted for use solely for the carriage of goods or merchandise." The hackney carriage is a vehicle which "stands or plies for hire." It is a commercial vehicle only in the sense that its operation is a commercial venture entered upon for the purpose of making a profit.

Still less has the ordinary motor coach a claim to be truly a commercial vehicle. It is really rather a pleasure vehicle run on a co-operative and profit-making basis. The fact that one, two, or three dozen people take their pleasure at the same time does not make the journey any less a pleasure trip.

Joyriding.

This new scheme of Mr. Holt Thomas' is simply a very promising attempt to exploit fairly the natural curiosity of more or less progressive people who have no practical experience of flight. Doubtless there will be quite a considerable rush upon the service, and, providing that it continues to run without accident, this rush should be maintained for a fairly long period. In essence, there is not much more connection between this kind of thing and commercial aeronautics than there is between a switchback railway at an exhibition and the ordinary railway of commerce.

This fact, however, does not mean that the experiment is useless or in any way trivial. The service will have a fine educative effect, opening the eyes of many people to the possibility of permanent services on the sounder basis of carrying people bent on business rather than on amusement. The promoters will also learn a good deal about the planning of seating accommodation and the means of increasing the comfort of passengers.

The Matter of Fares.

The fares must not be taken as a reliable guide to those which will rule when numerous regular services are in operation. Profits will then have to be cut much finer. People will pay a great deal to be among the first to do a new thing, but comparatively little to do that same thing when it becomes common practice and ceases to be anything to "swank" about when it is over.

In the matter of high prices, we may expect the people who are first in the field with their offer to accept bookings of seats to be the ones who will make the most money and make it most quickly. Probably the first service will be followed by a superfluity of more or less similar services between all sorts of points. After a time the excitement and unfamiliarity of the thing will die down, and then the operating companies will have to develop sound business propositions or else take their profits and close down.

Necessary Safeguards.

One may be sure that in the instance under review every possible precaution will be taken to prevent accidents from occurring. The machines will be thoroughly well maintained and well driven, but the time will come before long when it will be necessary in the interests of commercial aerial services themselves to introduce some fairly rigid regulations to prevent promoters of aerial trips from risking the lives of their passengers by employing comparatively incompetent pilots or cutting down the costs of maintenance and repair.

There is considerable risk of the history of the motor cab being repeated and services starting one after the other, each offering greater luxuries than the last, until finally, with increased competition, profits disappear altogether. A certain amount of this sort of thing is inevitable before the whole movement reaches a stage of sound and steady development, dependent upon a real and permanent demand.

LONG-DISTANCE PASSENGER FLIGHT.

Reuter's correspondent in Paris writes on Nov. 22nd:—

Mr. Handley Page, the well-known constructor of the famous bombing planes, is busy fitting out his machines for the cross-Channel service, which he intends to inaugurate very shortly. To begin with he will only put into commission his small machines, which will be fitted to carry twenty passengers.

The comfort of these machines will not be far short of that of a Pullman car. The cabins will be heated by electricity so that travellers will not require to possess expensive flying kit. Arrangements have been made for carrying a limited amount of passengers' baggage, and every modern convenience will be found aboard, including electric light throughout.

The fares at present will be £10 for a single journey and £15 for a return journey, the return half to be valid for three months. It is hoped to be able to reduce these fares by nearly half when things become more normal.

Fast and luxurious motors will take passengers to and from the aerodrome at each end, and the time-table will be so arranged that passengers will arrive at their destination in good time for lunch. Machines will start simultaneously from Paris and London and will cross each other near Boulogne.

As soon as all the arrangements are completed the service will be extended from London to Brindisi, the following being the probable towns of call: London, Paris, Lyons, Marseilles, Turin, Florence, Rome, and Brindisi. The machines will arrive at Brindisi in time to catch the P. and O. mail boat for Port Said and the East.

[Of course one always has to go abroad to get authentic news of one's own country.—Ed.]

FLYING TO THE NORTH POLE.

According to the "Times," Capt. Robert A. Bartlett, the Arctic explorer, now an officer in the United States Navy, is planning to fly an aeroplane from Etah, Greenland, to the North Pole next July. After his arrival at the Pole, he hopes to fly to Cape Chelustin, Asia.

[This seems pure damned nonsense.—Ed.]

A TRIAL FLIGHT.

The "Times" correspondent in Paris writes on Nov. 19th:—

At the trial flight of an aerobus yesterday 35 passengers made a successful trip from Combes la Ville to the suburbs of Paris and back again.



Men of the R.A.F. lined up on the roadside to cheer the King as he drives past on a Rolls-Royce car.

A.B.C.

AERO ENGINES

Sole Proprietors:

WALTON MOTORS, LTD.

WALTON-ON-THAMES.



Kaiser (*loq.*): "How is it at such a height on so cold a morning the lubricants do not freeze?"
Gen. Hoppner: "The British have discovered the secret which we have been seeking for months."
Vide "Daily Mail," see above.

A BRITISH FIRM BEATS THE GERMANS

THE SECRET

THE HANDLEY-PAGE....
After the two royalties had descended from the machine it was loaded with dummy bombs in preparation for a flight. The now famous German flying officer Richthofen took the seat which the Kaiser had vacated, and two other officers also boarded the plane. With a terrific roar the two engines were started, and like a bird the aeroplane rose in the air. It climbed rapidly to about 10,000ft., and the Kaiser turned to General Höppner, saying:
"How is it that, at such a height and on so cold a morning, the lubricants do not freeze?"
"The British have discovered the secret which we have been seeking for months," replied the general. "Our great difficulty is now surmounted. It [illegible]

Extract from "Life in Essen," Eye-witness's Account.—"Daily Mail," April 8, 1918.

WAKEFIELD Castrol 'R' MOTOR OIL (Racing)

S.B.A.C. THE SOCIETY OF BRITISH AIRCRAFT CONSTRUCTORS

WAS THE LUBRICANT USED

Castrol "R" possesses the lowest cold test of any known Aero Engine Oil.

C. C. WAKEFIELD & CO., Ltd.,
Manufacturers of Lubricants for all Classes of Power Plant and Machinery,
Wakefield House, Cheapside, London, E.C.2.



BRIGHT STEEL BARS AND STRIP

FOR ALL PURPOSES.

W. WESSON & CO., LTD.,

Iron & Steel Manufacturers,

MOXLEY, nr. WEDNESBURY.

THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

THE PRESENT POSITION.

Nov. 22nd.

The whole of the Aircraft Industry is practically marking time waiting for a definite policy to be announced by the Air Ministry. Very few orders indeed are being placed for materials.

It is essential in the interests of the nation that the Aircraft Industry should receive organised encouragement from the Government. It will, of course, be necessary to provide for a large Aerial Fleet, and the peace strength of the Royal Air Force is a question which should have been settled long ago; apparently it is at present under discussion.

Until this vital question has been settled it is impossible for the Air Ministry to give constructors any idea what their requirements will be, and it is also impossible to arrive at an accurate estimate of the expected consumption of aircraft materials.

The commercial side of the industry has been grossly neglected by the authorities, but now our backs are towards the awful night of carnage, bloodshed and sorrow, British constructors will, immediately the Government releases its controlling hold, set their faces towards world supremacy in designing, producing and organising the commercial aeroplane and seaplane.

There will certainly be a transitionary period, and this will probably be bridged by equipping the Royal Air Force with the most recently designed machines, but the regular demand for the aerial mail carrier, omnibus, ambulance, goods and parcel carrier, sporting model, racing model, etc., is bound to come. So much for the possible immediate and future demand.

Fortunately, there is already the tendency to relax the stringent control exercised over raw materials. A certain amount of control is certainly advisable, otherwise "corners" would be created in certain materials and prices would advance immediately. At the same time a reasonable amount of elasticity should be exercised.

Various committees are at work, and, generally speaking, will report to the Minister of Reconstruction on the following points:—

(1.) The nature and amount of supplies of materials which in their opinion will be required by the United Kingdom during the period which will elapse between the termination of war and the restoration of a normal condition of trade, and the steps which should be taken to procure these supplies having regard to,

(a) Probable requirements of India, Dominions, and Crown Colonies.

(b) Probable requirements of belligerents and neutrals.

(c) The sources from which and the conditions under which such supplies can be obtained and transported and in particular the extent to which they might be obtained from the United Kingdom or within the Empire or the Allied or neutral countries,

(2.) To consider and report whether any measure of control will require to be exercised, and the extent and character of such control.

The committees which directly affect the Aircraft Industry are:—

Aluminium.—Cecil L. Budd (Ministry of Munitions), Chairman; Murray Morrison (British Aluminium Co.); H. J. Jack (Aluminium Corporation); F. W. Gower (Birmingham Aluminium Castings Co.).

Copper.—Cecil L. Budd; Thos. Bolton (Wire Association); Ambrose Hopper (C.R.M.A.); G. Jewell (Ministry of Munitions); Sir G. A. Muntz (B. and C.T.A.); L. Sumner (C.M.A.); R. W. Rucker (London Metal Exchange).

Lead.—Cecil L. Budd, Lt.-Col. A. J. Foster (L.M.A.), C. Cookson, F. C. Hill, R. W. Rucker.

Tin.—Cecil L. Budd, J. B. Young (E. Bonsted and Co.), H. C. Bond (T.M.A.), R. W. Rucker.

Ferro-Alloys.—F. W. Harbord (Chairman), A. Balfour, H. A. Blackwell, W. Conan, F. MacLaren, H. Peile, T. R. Phillips.

A notification has also been received from the Ministry of Munitions to the effect that restrictions prohibiting manufacturers from undertaking certain classes of orders and from using certain materials, otherwise than for certain specified purposes, will be relaxed as far as possible; in this connection it might be worth while quoting an extract from a speech made by Dr. Addison on Nov. 12th:—

"With regard to other metals (i.e., other than Steel and Pig Iron) there is a sufficient supply available to render it possible to release some from control now and nearly all the rest within six months. I am convinced, after a close survey of the position, that we shall be able to meet the demands which reconstruction will make on our resources. But while I am satisfied that there will be enough for all if it is equitably divided, there must be no selfish attempts on the part of individuals to secure more than their share, and for this purpose it may be necessary to take precautions against hoarding."

The present price position of the various materials is dealt with under the usual headings.

COPPER.—The price of Copper has not been affected by the Armistice, but the question has been very freely discussed and various arguments put forward to support the contention that prices will advance after control has been removed; this is doubtful, and the probability is that there will be very little alteration during the next two or three months.

TIN.—The price of Tin has declined to £325 10s., and although, in some quarters, the price is expected to advance when the control has been relaxed, this is not at all probable; in fact, it is practically certain that prices will continue to decline.

Comparative Prices.

To-day, 22nd	£325 10 0 per ton.
A week ago	£330 10 0 per ton.
Two weeks ago	£334 10 0 per ton.

LEAD.—It is not now necessary for buyers to obtain permits, and manufacturers are allowed to sell without restraint provided that no interference is involved with priority work. The official prices are unchanged.

STEEL.—Official prices are unaltered (see Prices Current).

TIMBER.—It is understood that this material will continue to be controlled for a period which has not yet been specified. The reasons given for this arrangement appear to be as follows:—

1. The control of shipping space required for carrying timber.

2. To control the distribution of timber: (a) To Home consumers engaged on important work (b) To our Allies.

There does not, however, appear to be any reason why the above objects could not be achieved without continuing the present stringent and bureaucratic control.

Official prices continue unaltered but the price of Mahogany is easier.

FABRIC.—Official prices remain unchanged (see Prices Current).

THE MONTHLY MARKET PRICE LIST.

Nov. 19th, 1918.

The prices given below are the prices ruling on the above date.

Aluminium.*

Ingot	£225 per ton.*
Remelted	£210 per ton.*

Brass.

Sheets	16⅛d. per lb.
Strip	15⅛d. per lb.
Wire	15⅝d. per lb.
Tubes	17¼d. per lb.
Castings	16d. per lb.
Turning Rod	14¼d. per lb.
Brazed Tubes	19½d. per lb.

Copper.*

Ingot, Standard, Cash	£122 per ton.*
Ingot, Standard, 3 mos.	£122 per ton.*
Best Selected (Net)	£135 to £131 per ton.
Sheets	£161 per ton
Wire	17d. per lb.
Tubes, S.D.	20½d. per lb
Tubes, Brazed	20½d per lb.
Rivets	2s. per lb., basis.

Fabric.*

Linen, R.A.F., 17C, Spec., 36 in. wide,	3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38in. wide,	3s. 3d. p. yd.
Linen, R.A.F., 17C, Spec., 42 in. wide,	3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide,	2s. 1d. p. yd

GUN METAL. A.M. SPECIFICATION.

Castings .....2s. 3d. to 2s. 6d. per lb.

LEAD.*

Virgin Pig .....£29 per ton, c.i.f.
Virgin Pig .....£30 per ton, ex stores.
Sheets .....£39 10s. per ton, D/d.
Pipes .....£40 per ton.
Dry White .....£46 10s. per ton, less 5 per cent
White in Oil .....£53 per ton.
(lots over 5 cwt. less 5 per cent.)
White in Oil .....£55 per ton.
(lots under 5 cwt. less 5 per cent.)
Red .....£42 per ton, less 2½ per cent.

NICKEL.

Nickel .....£225 per ton.

PHOSPHOR BRONZE.

Ingots, 5 cwt., and under.....£168 to £198 per ton
(Subject to Copper and Tin Fluctuations.)
Castings .....1s. 9d. to 2s. 2d per lb.

PHOSPHOR COPPER.

Ton lots .....£175 to £191 per ton.

SILVER.

Silver .....49½d. per oz.

SOLDER.

Plumber's .....132s.
Tinman's .....177s.

STEEL.

High Speed, 14 p. cent., Tungsten, 3s. 8d. per lb., basis.
High Speed, 18 p. cent., Tungsten, 4s. 5d. per lb., basis.

ALLOY STEELS TO AIR MINISTRY SPECIFICATIONS *‡

Round and Square :—

Specification No. S2 .....£86
Specification No. S2 (bright-drawn) £115
Specification No. S8 .....£86
Specification No. S10 .....£70
Specification No. S12 .....£75
Specification No. S14 .....£43
Specification No. S15 .....£70
Specification No. S16 .....£70
Specification No. S17 .....£75
Specification No. S18 (oil-hardened) £85
Specification No. K1 .....£75
Specification No. K2 .....£75
Specification No. K3 .....£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.

HEXAGONS.

	.455 and .525	.601 to .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

SPELTER.

English f.o.b., Birmingham .....£54 to £50.

TIN.

Tin .....£334 10s.

TINPLATES.

Tinplate .....32s. 6d., basis, f.c.t.

TIMBER.

	†Official.	Merchants.
Silver Spruce,		10s. 4d., c.f.
*English Ash—		
Selected Logs		7s. 6d., c.f., f.o.r.
Selected Lengths of Planks		10s. 6d., c.f., f.o.r
Mahogany		2s. to 2s. 6d.
Walnut		2s. to 2s. 6d

* For further details see Home Grown Timber Prices Order.

ZINC.

Zinc Sheets (American).....£100, f.o.b., New York

SCRAP MATERIALS (LONDON PRICES).

ALUMINIUM.

Description.	Price per ton on sale to refiner, delivered at refinery.
Sheet cuttings and rods containing a minimum of 96 per cent. Al.	£160 0 0
Old rolled, etc., containing a minimum of 96 per cent. Al.	120 0 0
Spinnings, punchings, and thin small scrap; also painted and varnished scrap that needs melting, containing a minimum of 96 per cent. Al.	105 0 0
Lump scrap from aero castings and material of equivalent value, containing 87 to 96 per cent. Al.	100 0 0
Turnings and Swarf, generally containing 87 to 95 per cent. Al.	87 10 0
Scrap, generally containing 80 to 86 per cent. Al.	80 0 0
Swarf and inferior Swarf, generally containing 80—85 per cent. Al.	70 9 0
All Scrap, containing below 80 per cent Al., not to exceed	65 0 0
All Swarf, containing below 80 per cent. Al.	50 0 0
Brass, Heavy Selected	£82
Copper, Clean	110
Copper, Brazery	90
Gun-metal, Scrap	124
Lead, no Draft	26
Zinc, Old	43

* Official Prices. † Includes Parcel Inspection only. ‡ Prices include Delivery in the U.K.

BLERIOT, LTD.

Excellent work has been done all through the war by the old-established firm of Blériot, Ltd., whose head offices are at Long Acre, W.C. This company is not to be confused with others bearing somewhat similar names.

Blériot, Ltd., was founded in 1901 as a British company to handle the Blériot motor lamp business in this country, and as lighting specialists they were mainly occupied up to the outbreak of war. Motorists all over the world are familiar with Blériot lamps, for it was in lamp design that the famous French aviator first same into prominence. It was from this work, I believe, that he paid for his pioneer work in aircraft building.

Needless to say, the lighting of aeroplanes came easily to a firm like Blériot, Ltd., and during a recent visit to their British factory I had ample opportunity of seeing the splendid work they turn out. Under the guidance of Mr. Weldhen, the enterprising works manager, I went through the entire factory, and I saw many fine products other than the motor and aircraft lamps.

As regards the standard type of aeroplane lamp now supplied, I can compliment the designer on the good features of the model, and from the skilled hands of the Blériot firm the finished article turned out is an object of beauty as well as utility.

Very high-class workmanship is required in order to obtain a really good and serviceable aeroplane lamp. Weight and wind resistance must be most carefully studied, and at the same time the highest possible degree of reliability must be attained. Although there are no police—as yet—in the skies to summons a pilot whose lamp has gone out, the aviator, for his own safety, must be able to place the utmost dependence on his lamps, and he cannot very well pull up in mid-air and carry out a wayside adjustment if a lamp fails.

As might have been expected, Blériot, Ltd., with their success in such fine work as lamp-making, have progressed to other operations also demanding high skill. They have achieved another notable success as makers of floats for carburetters of various kinds. It may come as a surprise to many people, even old motorists, to know how delicate a structure is a carburetter float. That it gives so little trouble nowadays is due to the great improvement in manufacture which has taken place.

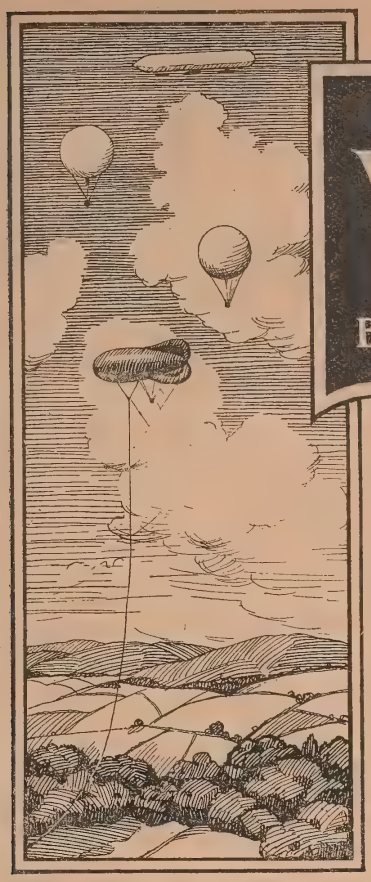
One of the most melancholy and hopeless tasks in the early days of motoring was to mend a carburetter float when, your car having stopped by the roadside, you discovered, after long and painful diagnosis, that the float had sprung a leak and that the whole petrol supply system had descended to anarchy. A tiny hole did the trick, and I can commend to the modern luxurious traveller by road or air as a trial of patience the task of finding and mending a leak in a carburetter float.

In the motor-car the float has only to stand a certain amount of vibration and pounding. But in the aeroplane there is increased vibration, and in addition there is the very big effect wrought by sudden changes of air-pressure at different altitudes. On the aeroplane a leaky float means a flooded carburetter, and a flooded carburetter may mean sudden disaster and death.

Most floats require to be made with a seam or joint, and the closing of this joint is a very nice piece of work. I found that Mr. Weldhen had made himself a specialist in float-making and design, and that he had evolved several novel designs of outstanding merit. It is thus not to be wondered at that Blériot, Ltd., have made a big name for themselves as makers of floats, and as I followed the whole course of operations I saw how much care and skill were devoted to the task at every stage.

To make a closed cylinder of brass capable of floating in petrol and of standing severe vibration and great range of air-pressure, and to turn out enormous quantities of these floats under war urgency conditions is a very good test of a factory's capabilities.

It is of no small importance to our future industrial success that we should encourage factories of the Blériot type which can so successfully turn out high-precision work, much of which we formerly got from abroad. Blériot, Ltd., lay themselves out for all classes of light stampings, sheet metal work, spinning, etc.—H.



THE
WILLOWS AIRCRAFT
CO., LTD.
BALLOON & AIRSHIP CONSTRUCTORS
Specialists in Air Bag Floats
for Aeroplanes
Contractors to
Admiralty & Air Ministry

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THE PIONEER OF SMALL
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When the time arrives for the resumption of normal business you will be wanting a

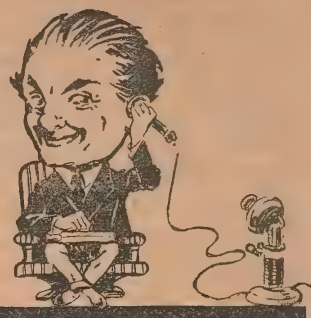
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HUMBER LIMITED, COVENTRY.

Mr. "ASCOL" AWAITS :: YOUR MESSAGE ::



No matter who lets you down Phone up "Ascol."

ASCOL HOUSE is the largest Aircraft Stores in Europe. Small metal parts for all types of machines are kept in stock and we can make immediate delivery of even large requirements. Over 5,000,000 parts constantly ready. All orders despatched same day as received—by Ascol-direct motor service or by passenger train

If you make one special type of machine only send a postcard naming type, and we will post you a special leaflet detailing parts and prices.

WE have also stocks of factory equipment including brushes, "Ascol" Caliper gauges, "Ascol" Micrometers, Files and File-cleaners, Screwdrivers, Hammers, Stools, Folding Seats, "Ascol" Cast-steel Stamps and "Ascol" Patent material-saving Dope and Paint Cans. Mem. Every manufacturer should see the "Ascol" Dope Can. It saves its cost the first week. Approved and recommended by the Air Board.

Illustrated leaflets fully describing the exclusive advantages of each of the above "Ascol" Specialities sent on request.

Send for Copy of "AIRCRAFT SUPPLIES."

"AIRCRAFT SUPPLIES," 24 pages, published fortnightly is packed with matter invaluable to any buyer of aircraft parts and accessories. There is an index for ready reference, summarizing parts and equipment, and giving the page where full illustrated particulars and prices are to be found. No one should be without a copy.

We have representatives

in Manchester, Birmingham, Leeds, Newcastle-on-Tyne, Cardiff, Southampton, Edinburgh and Glasgow. They have copies of "Aircraft Supplies" for distribution, and have samples of all "Ascol" Specialities. They are in constant touch with "Ascol" House and can give you down-to-the-minute information in regard to stocks held and prices of same.

Send us a post-card for copies of "Aircraft Supplies," and we will *wire* our local representatives for your district to call



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"ASCOL" HOUSE, 125, LONG ACRE,
LONDON, W.C.2.
G. H. MANSFIELD, Managing Director.

TRADE MARK ASCOL REGISTERED

THE REMOVAL OF RESTRICTIONS ON NON-FERROUS METALS.

The Minister of Munitions gives notice that H.M. Government is prepared, until such time as the existing Orders issued under the Defence of the Realm Act are withdrawn, to release without special priority permits stocks of non-ferrous metals, in so far as they are available for general industrial purposes.

Applications in connection with the release of such materials should be made to the Controller of Non-Ferrous Materials Supply, Ministry of Munitions, Hotel Victoria, Northumberland Avenue, W.C.2.

The Government will, where necessity arises, continue to issue Priority Permits for work of special national importance, and firms may still issue priority certificates where the Order as to Priority of March 8th, 1917, allows them to do so. Any orders covered by such permits or certificates or by existing permits or certificates not cancelled by specific instructions of the Government will still be executed in accordance with the Order as to Priority of March 8th, 1917.

No application need be made to the Priority Department of the Ministry of Munitions unless it is desired to raise the priority of a contract on grounds of national importance.

Agents or brokers may be employed.

Licences will, when necessary, be granted by the War Trade Department for the export of goods manufactured from non-ferrous metals, as freely as possible to all destinations unaffected by the blockade.

PRESENT SCHEDULE OF PRICES

Copper.—Electrolytic	£137	per ton delivered buyers' works.
Best Select	£135	do.
Brass Ingot, to Government Specification	£93	do
Spelter, G.O.B.	£57	do
Refined, 99.9 %	£75	do.
Aluminium	£200	do.
Soft Pig Lead	£40	per ton ex steamer or ex store.
(The existing schedule in relation to manufactured articles in lead is abolished.)		
Nickel	£105	per ton ex works or warehouse.
Antimony	£80	do.

These prices are subject to usual extras for small parcels.

THE REMOVAL OF RESTRICTIONS REGARDING MANUFACTURE OF FORGINGS.

The Minister of Munitions announces that until further notice manufacturers of forgings, stampings and castings, in iron, steel, or malleable iron, are at liberty to accept orders for such forgings, stampings and castings for priority below Class B, subject only to the Order as to Priority dated March 18th, 1917.

For this purpose the operation of such clauses of the Control of Steel Supplies Order of Nov. 20th, 1916 (as amended by the Order of Dec. 14th, 1917), as prohibit the manufacture of iron, steel, or malleable iron or orders ranking below Class B is suspended.

IRON AND STEEL WIRE AND WIRE ROPES.

The Minister of Munitions gives notice that as from Nov. 23rd no permit is required from the Ministry of Munitions or any other Department for the manufacture or sale of iron and steel wire or wire ropes for the home trade.

The Government will, where necessity arises, continue to issue Priority Permits for work of special national importance, and firms may still issue Priority Certificates where the Order as to Priority of March 8th, 1917, allows them to do so. Any orders covered by such permits or certificates or by existing permits or certificates not cancelled by specific instructions of the Government will still be executed in accordance with the Order as to Priority of March 8th, 1917.

No applications need be made to the Priority Department of the Ministry of Munitions unless it is desired to raise the priority of a contract on grounds of national importance

Colonial and foreign applications must be put forward in the usual way, the former to the Priority Department, 1, Caxton Street, Westminster, and the latter to the War Trade Department, 4, Central Buildings, Westminster, S.W.1.

IRON AND STEEL PRICES.

The Minister of Munitions reminds all buyers and sellers of iron and steel that the current maximum prices for home sales of iron and steel remain in force until a further announcement is made.

SECOND-HAND MACHINE TOOLS.

Notification has been received that the following Machine Tools may be bought and sold without obtaining sanction from the Ministry and without restriction as regards price. This suspension of regulations, however, does not in any way affect the position with regard to new tools. A notification concerning new tools will be issued in the course of the next few days.

Second-hand Machine Tools
do. Woodworking Machinery.
do. Treadle Lathes.

LEAD.

Orders for Lead can be placed and executed without obtaining permission from the Ministry of Munitions on the understanding that such orders do not affect orders placed under Priority Certificates.

NEW WOODWORKING MACHINERY.

It is reported that the control of purchase and sale of new Woodworking Machinery has been cancelled. This, however, has not been officially confirmed.

DEMOBILISATION PLANS.

The Controller-General of Civil Demobilisation and Resettlement states :—

Army Reserve Munitions Workers, who have served in the Royal Air Force and are at present in Class F, or F (P) of the Royal Air Force Reserve, will be discharged, and any payment or allowance due to them will be forwarded in due course.

THE ENEMY AIRCRAFT SHOW.

So great have been the attendances at the Royal Air Force Enemy Aircraft Exhibition at Agricultural Hall, Islington, that it has been found necessary to extend the hours of opening, and also the days upon which the Exhibition is open to the public. From to-day the hours will be from 10 to 10 on all week days, and from 3 to 10 on Sundays.

AERIAL TELEPHONY.

According to a report from Washington, on Nov. 24th, President Wilson and Mrs. Wilson, speaking into an ordinary telephone mouthpiece in the President's study at the White House, directed a flight of a squadron of six Army aeroplanes over Washington, some two miles from the White House.

Pilots manœuvred their machines according to orders given by the President through the radiophone or wireless telephone, recently perfected by War Department experts.

[One recalls something of the sort being done in this effete old country a matter of years ago.—Ed.]

COMMERCIAL AERONAUTICS.

All pilots and qualified technical people, whether officers or men, of the Royal Air Force who do not intend to follow a Service career after Peace is declared, and who are seriously interested in the prospects of commercial aeronautics after the war are invited to communicate with Capt. A. J. Swinton, care of THE AEROPLANE, 166, Piccadilly, W.1. Those communicating should state whether they are pilots, or, if technical people, what has been their precise experience during the war, or before it.

AERIAL TRAVEL.

Mr. Holt Thomas, in the course of an interview with a representative of the "Daily Chronicle," spoke of the proposed activities of the Aircraft Travel and Transport, Ltd., of which he is chairman, in France, Italy, Norway, India, South Africa, Denmark, China, and Japan.

He stated that the D.H.10 twin-engined bomber would be adapted for passenger-carrying, and would be provided with a heated and ventilated cabin. At first only five or six passengers could be carried, but this would be increased when a specially designed commercial machine is finished.

Mr. Holt Thomas said :—"At 15 guineas a passenger we expect to lose at first, but we look to the mail contracts to make the scheme a successful proposition."

A NEW PLUG DEPARTURE.

The manufacturers of the popular "Apollo" plugs are producing their L.C.B. model plug in brass instead of in steel, although, for the moment, half-inch gas thread is the only size available in brass. The metric measurements will continue to be supplied in steel for the time being.

The "Apollo" L.C.B. plug is designed specially for low-compression and oily engines, which include practically all the American cars on the English market. It is claimed also that, for the Ford car particularly, the "Apollo" is the perfect plug.

Its present manufacture in brass offers many advantages. The brass does not corrode; it looks better, keeps cleaner, and, largely because of the non-corrosion, will not bind into the cylinder.

Brown Brothers, Ltd., are handling "Apollo" plugs, and the price is the same in brass as in steel—viz., 4s. The plug is so designed that it may quite easily be taken apart.

The price of the No. 1 "Apollo" has had to be increased to 6s. on account of the increased cost of the mica used in its manufacture, and is of a similar quality to that used in the No. 8 model specially designed for rotary-type aeroplanes.

AUSTRALIAN ENTERPRISE.

It is reported that, at the instance of the British and Commonwealth Authorities, tests are being conducted in Western Australia of local timbers thought to be suitable for aeroplane building.

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(Continued from page 971.)

DENTAL BRANCH.—The following are granted temp. commns. as Lts.:—
J. Jones, J. Wren, Nov. 15th.

MEMORANDA.—Maj. B. M. Jones, A.F.C., to be actg. Lt.-Col. while holding a special appt. at the Ministry of Munitions, July 22nd.

Sec. Lt. W. M. F. Sherwood to be actg. Capt. while holding a special appt. at the Ministry of Munitions, Oct 3rd.

H. Fletcher (Lt., Lancs. Fus., T.F.) is granted a temp. commn. as Lt., Sept. 23rd, seny. April 1st.

Lt. K. Rawson-Shaw to be Hon. Capt

Sec. Lt. A. L. Fink to be Hon. Lt.

R. R. Truscott (late Sec. Lt., R.A.F.) is granted the hon. rank of Sec. Lt., Nov. 6th

Lt. T. J. Donovan to take rank and precedence as if his appt. as Lt bore date Sept. 19th.

Capt. J. Robertson (Capt., R. Sco. Fus.) relinquishes his commn. on ceasing to be empld., Oct. 31st.

AIR MINISTRY, Nov 22nd.

R.A.F.—The following temp. appts. are made at the Air Ministry:—
Staff Officer, 1st Cl.—Capt. (actg. Maj.) J. McIntyre, M.C., and to be actg Lt.-Col. while so empld., Nov. 7th

Staff Officers, 3rd Cl.—And to be actg Capts. while so empld.:—Sec. Lt. (actg. Lt.) D. B. Gunn, Sec. Lt. (actg. Lt.) J. Keyes, Nov. 12th.

Staff Officer, 4th Cl.—C. H. Finnis (temp. Sec. Lt.), R.E.) is granted a temp. commn. as Sec. Lt., and to be actg. Lt. while so empld., April 1st.

The following temp. appts. are made:—Staff Officers, 2nd Cl.—And to be actg. Majs. while so empld., if not already holding that rank:—
Capt. (actg. Maj.) C. F. Yeomans, Aug. 26th; Capt. N. H. Bottomley, Sept. 19th.

Staff Officers, 3rd Cl. (P.).—A. Eggar (Lt., R.A.) is granted a temp. commn. as Lt., July 10th, seny. June 10th, and to be actg. Capt. while so empld.; (T.) Lt. E. L. Hyde, and to be actg. Capt. while so empld., Sept. 28th The rank of Capt. W. Ricketts is as now described, and not as stated on page 1290 of the "Gazette," Nov. 1st.

Staff Officer, 4th Cl (1st Gr.).—Capt. C. W. C. Browne, Aug. 26th.

Staff Lt., 3rd Cl.—(P.) Lt. L. L. Lindsay, Aug. 28th to Nov. 1st.

FLYING BRANCH.—Maj. R. Chadwick, M.C., to be actg. Lt.-Col. whilst empld. as Lt.-Col. (A.), Aug. 1st.

Capt (actg. Maj.) E. A. O. Auldjo-Jamieson to be actg. Lt.-Col. while empld as Lt.-Col. (K.B.), Sept. 24th.

Capts. to be actg. Majs. while empld. as Majs. (K.B.):—S. St. G. C. Belfield, B. E. P. Gregg, D.S.C., L. W. M. Lloyd, T. F. Morris, T. R. Spence, Sept. 24th.

Capt. C. Gilmour to be graded for pay as Capt. while empld. as Capt. (A.), April 1st.

Capts to be graded for pay as Capts. while empld. as Capts. (A. and S.):—P. B. Silk, April 1st; V. H. Ramsden, Oct. 25th.

Capt. N. Grabowsky to be graded for pay as Capt. while empld. as Capt. (A'shp.), Nov. 9th.

Capts. to be graded for pay as Capts. while empld. as Capts. (K.B.):—E. Ball, H. S. Bompas, J. E. Brewin, C. A. Beck, G. F. Browne, G. B. Carr, W. J. Calderwood, N. H. Fletcher, M. G. Gill, J. G. Hudson, A. M. Harding, W. O. F. Harding, M. Hunter, T. C. Lloyd, D. C. Page, F. E. Rogers, N. E. Stirling, W. P. D. C. Scott, B. H. Sisson, D. C. Woods, N. Wallis, G. E. Williamson, J. W. Walton, Sept. 24th.

Lt. J. A. Sully to be actg. Capt. (A.) whilst specially empld., April 18th.

Lts. to be actg. Capts. while empld. as Capts (A.):—E. F. McIlraith, Oct. 21st; J. G. Elias, Nov. 16th.

Sec. Lt. M. Forsyth to be actg. Capt. whilst empld. as Capt. (A.), Nov. 14th.

Lts. to be actg. Capts. whilst empld. as Capts. (K.B.):—T. A. Byers, C. L. Bruce, H. Cubitt, H. Copley, E. W. Geer, A. Howard, C. Hayward, F. Kershaw, E. J. Keane, H. W. Lee, F. P. O. Mann, F. T. Munccy, G. Macfarlane, H. L. Murphy, W. G. Pegg, W. J. Rawson, H. C. Reeve, M. H. Whitelegge, T. H. Whitby, Nov. 6th.

Lt. E. D. Harding to be actg. Capt. whilst empld. as Capt. (O.), Oct. 29th.

Sec. Lts. to be actg. Capts. whilst empld. as Capts. (O.):—R. P. Keely, (Hon. Lt.) J. F. D. Tanqueray, Oct. 29th.

Lts. (Ad.) to be Lts. (A.):—A. J. Watson, Nov. 14th; L. J. N. Mackay, Nov. 16th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. (K.B.):—A. A. Barnes, J. Cranfield, A. Page, D. Smith, J. W. Watson, Nov. 6th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—305069 F. D. Kendall, July 2nd; 520095 J. H. Lamb, July 13th; 459015 T. H. Blatchford, July 27th; 110678 E. H. Buxton, Aug. 8th; 50540 E. S. Alger, 446931 T. H. Little, 4409 J. R. Gibb, 99964 H. C. Webb, Aug. 21st; M2/229448 W. H. Herd, 94724 A. V. Dearden, Aug. 30th; 339419 W. W. Coates, 117693 S. L. F. St Barbe, Sept. 26th; 540242 L. B. McMurtry, Sept. 28th; 154929 P. G. Kew, 154923 C. Pelk, Oct. 2nd; 426412 W. J. Metcalfe, 2718 J. Laxdal, Oct. 28th; 3856 C. E. Parker, 156110 E. D. Drew, 100637 B. W. Joyce, Oct. 31st; 5/61674 A. V. Hale, Nov. 1st; 67058 D. W. S. Ireland, Nov. 3rd; 54120 C. Ashworth, 19991 L. B. Farmiloe, 100087 E. A. Liggins, 110154 J. McA. Allan, Nov. 5th; 318577 H. E. Brenack, 527 C. W. Wilson, 134208 F. L. James, Nov. 6th; 760339 W. A. Archibald, 100224 J. K. R. Walker, 117091 S. J. Henley, 767309 W. A'L. D. Glover, Nov. 7th; 924 N. Phillips, 524632 W. H. Settle, 302904 C. G. Paul, 117834 D. W. Welch, 535357 H. P. Bowring, 3/3913 A. S. Green, Nov. 8th; 117584 W. L. Alston, Nov. 9th.

Cadets are granted temp. commns. as Sec. Lts. (A.):—L. L. Allen, G. F. Anderson, J. C. Balletinne, W. G. Banting, L. C. R. Batten, D. H. T. Blake, P. G. Cameron, W. E. Cane, R. D. Chalmers, C. A. Craig, W. V. Creaghan, L. C. Dandurand, N. W. Davidson, E. De Lorme, A. J. Deiron, J. P. Downey, J. S. Finch, F. J. Flahiff, C. R. Fullord, F. W. Glasby, T. I. Goodall, E. T. Griffith, C. F. Joyner, A. R. Lavell, W. F. Matthews, G. L. Mitchell, J. G. McCarthy, J. I. McNeil, J. F. Nelson, E. R. S. Nurse, R. J. Payne, G. H. Pearce, H. W. Perkins, E. L. Peters, M. Phillips, C. E. Revell, C. W. Riley, D. M. Rohrer, E. H. Searle, H. Smart, G. F. Smith, W. C. Soresby, Le R. Springstead, A. C. Thompson, F. L. Van Allen, R. L. Walker, D. E. Woolard, P. J. Young, E. G. Smith, Oct. 10th.

J. Helingoe is granted a temp. commn. as Sec. Lt. (A.), Oct 17th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.):—95395 T. A. Clarke, Sept. 23rd; 175471 S. C. Bennington, 175472 H. D. Christie, 175473 J. L. Davis, Nov. 2nd; 176537 H. W. McL. Hammond, 176583 C. F. Melville, 176517 B. B. Everitt, 176539 P. S. Henderson, 137960 E. J. G. Boyd, Nov. 9th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A'shp.):—178060 J. Stephens, July 17th; 128896 H. Ogden, Oct. 15th; M2048220 J. D. A. Ness, 36629 H. J. Humphrey, Oct. 16th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—137591 J. B. Robson, 137117 C. A. Spooner, 110739 S. Perkins, Sept. 7th; 8771 R. E. Skinner, Oct. 10th; 73327 T. J. Egan, Oct. 20th; 158078 R. A. Forth, Oct. 26th; 30780 H. L. Bellamy, 527548 A. H. Coles, 178312 J. G. Davies, 760018 G. W. Green, 14258 L. S. Greenaway, 426431 H. Gates, P/5309 L. R. Lane, 505486 C. W. Prynne, M.M., 52855 W. A. Waite, Oct. 31st, 3135 N. Main, 16482 Trezke, 34395 R. Berry, 34652 P. J. R. Payne, 37277 F. Lake, 56425 N. A. W. MacQueen, 110918 W. J. Mitchell, 506045 J. B. Scott, Nov. 1st; 178117 A. Anderson, 178226 T. E. Ault, 260019 P. E. Bullock, 476442 F. A. Starling, 515807 L. G. Todd, Nov. 3rd; 742203 R. H. Paterson, Nov. 5th; 349384 H. D. Dewar, 76747 T. S. Benson, 128015 J. P. Fullarton, 128634 F. C. Hird, 176168 A. W. Amson, 176234 E. H. Firth, 223336 C. F. Hull, Nov. 7th; 137584 C. H. Moore, 178567 E. Barker, 778281 K. V. McKitterick, Nov. 9th; 175951 C. H. G. Pryer, 177716 O. Hopkins, 178555 F. W. Swain, 178731 G. H. W. Legge, Nov. 10th.

The following Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—L. P. Ashley, R. G. Bessey, B. R. Brinton, J. Copeland, F. J. Griffiths, D. H. Howland, W. J. Hoxworth, A. Kitchen, T. Moffatt, jun., A. Tencer, H. H. Thomson, W. H. Vogan, Oct. 10th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (S.):—110861 C. J. McFadden, 494062 A. Waller, Nov. 8th.

Lt. (Hon. Capt.) C. G. Davidson (Quebec R.) resigns his commn., Nov. 23rd.

The surname of Lt. (actg. Capt.) R. Grandy is as now described, and not Grady, as stated in "Gazette," Nov. 5th.

The Christian names of 177083 Flt. Cadet Douglas McLay Ferrier are as now described, and not as in "Gazette," Nov. 12th.

The Christian names of 117497 Flt. Cadet Anthony Innes Dodsworth are as now described, and not as in "Gazette," Nov. 12th.

The Christian names of 320017 Flt. Cadet Gilbert Laurance Button are as now described, and not as in "Gazette," Nov. 15th.

The notification in "Gazette," May 21st, concerning Sec. Lt. D. P. Laird is cancelled.

The notification in "Gazette," May 24th, concerning Sec. Lt. J. S. Clark is cancelled.

The notifications in "Gazette," May 28th, concerning Sec. Lts. H. L. Tamplin, M. L. Green, and P. R. Moore are cancelled.

The notification in "Gazette," May 31st, concerning Sec. Lt. N. A. Weir is cancelled.

The notification in "Gazette," June 4th, concerning Sec. Lt. F. L. Le Lievre is cancelled.

The notifications in "Gazette," June 7th, concerning Sec. Lts. G. C. C. Carr-Harris and W. C. Goudie are cancelled.

The notification in "Gazette," June 14th, concerning Sec. Lt. H. B. Oldham is cancelled.

The notification in "Gazette," Oct. 4th, concerning Lt. J. Wedgewood is cancelled

The notification in "Gazette," Nov. 5th, concerning Lt. J. A. Stedman is cancelled.

The notification in "Gazette," Nov. 8th, concerning Sec. Lt. D. D. Carcary is cancelled.

ADMINISTRATIVE BRANCH.—A. T. L. Nye (Fleet Paymr., R.N.) is granted a temp. commn. as Lt.-Col., April 1st.

R. H. Ferguson (Capt., actg. Maj., Irish Gds.) is granted a temp. commn. as Maj., June 26th, seny. from April 1st.

Capt. (actg. Maj.) W. R. Mackenzie, D.S.C., retains the actg. rank of Maj. while empld. as Maj., from (S.), Oct 22nd

The following are granted temp. commns. as Capts., seny. April 1st:—
H. Burn-Murdoch (Capt., Camn. Highrs.), June 4th; W. E. Horan (Capt. and Qrmr., Gen. List), July 31st; J. W. J. Cromlyn (temp. Capt., Welsh R.), Oct. 17th.

Lts. to be actg. Capts. while empld. as Capts.:—G. H. Puckle, May 25th (substituted for notification in "Gazette," July 30th); T. G. St. B. Baker, July 1st; H. M. Kendle, July 26th, J. H. Evans, Oct. 21st.

Sec. Lt. (Hon. Lt.) S. G. Manders to be actg. Capt. while empld. as Capt., from (K.B.), Nov. 7th.

Lts. (A.) to be Lts.:—(Actg. Capt.) J. F. Byrom, and relinquishes actg. rank of Capt., R. S. Tipple, Oct. 31st; F. H. Jackson, Nov. 2nd; W. P. Harris, Nov. 11th.

Lts. to be Lts.:—L. Quartermaine, from (K.B.), June 8th; H. E. Gooding, from (O.), Nov. 5th; J. F. Titmas, from (O.), Nov. 13th.

A. Cleave is granted a temp. commn. as Lt. and to be Hon. Capt., July 30th (substituted for notifications in "Gazettes," Sept. 13th and Sept. 27th).

The following are granted temp. commns. as Lts., with seny. from April 1st:—Hon. J. E. de G. Henniker-Major (temp. Lt., Gen. List), July 31st; A. A. Bridgewater (Hon. Maj and Qrmr., Oxf. and Bucks L.I.), and to be Hon. Maj., Aug. 4th; W. S. Hann (Lt., R. Horse Gds.), Oct. 5th; H. C. Stanley (Capt., W. Yorks R.), and to be Hon. Capt., Oct 7th; D. A. Tomlinson (temp Lt., Hants R.), Oct. 30th; S. P. Jacoby (temp. Lt., King's Afr. R.), Nov. 13th.

Sec. Lts. to be actg. Lts. whilst empld as Lts.:—(Hon. Lt.) D. B. Martin, Aug. 28th; R. N. H. Cole, Nov 1st; (Hon Capt.) W. La Brum, Nov. 8th; (Hon. Lt.) G. Newton, from (T.), (Hon. Capt.) A. N. Wyatt, Nov 11th.

J. J. McBrearty (temp. Sec. Lt., R. Dub. Fus.) is granted a temp. commn. as Sec. Lt., Sept. 30th, seny. from April 1st, and to be actg. Lt. whilst empld. as Lt. (substituted for notification in "Gazette," Nov. 5th.)

The following Sec. Lts. (late Gen. List R.F.C., on prob.) are confirmed in their rank as Sec. Lts.:—G. V. Jennings, H. A. Fowkes, April 1st.

Sec. Lt. R. R. Byrne to be Sec. Lt., from (Tech.), July 12th.

E. B. Pym (Sec. Lt., R.D.C., T.F.) is granted a temp. commn. as Sec. Lt., July 31st, seny. from April 1st

The following are granted temp commns. as Sec. Lts:—A. G. Adams July 1st; W. Smith, Nov. 6th; J. H. E. Weekes, Nov. 11th; A. G. Smith, Nov 16th; D. A. Angus, C. E. Easton, G. Ercole, V. M. Evans, R. F. Fry, P. C. V. Halliwell, M. F. Hamilton, H. Hinchliffe, D. A. McCallum, W. G. Merrick, C. E. E. Raby, A. N. Ramsey, A. F. Perkins, J. G. Smithson (late Sec. Lt., Gordon Highrs.), J. Tunbridge, C. St. J. Vaughan, Nov. 18th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted hon. rank of Sec. Lt.:—H. A. Fowkes, F. H. Whitlock, Nov. 23rd.

Sec. Lt. C. H. Budd resigns his commn., being physically unsuited for duties of Pilot or Obsr., Nov. 23rd.

Initials of Lt. T. C. Wilkinson are as now described, and not as in "Gazette," Nov. 5th

TECHNICAL BRANCH.—Capt. (Hon. Maj.) A. E. Hatton to be Capt. (Hon. Maj.), from (S.O.), Sept. 2nd.

The following are granted temp. commns. as Capts., seny. April 1st:—
K. J. Young (Capt., R.E.), Sept 5th; W. A. B. Laing (Hon. Capt., R.E. Services), Nov. 6th.

The following Lts. (actg. Capts.) retain actg. rank of Capt. while empld. as Capts. (Grade A), from (Ad.):—C. W. Jamieson, Nov 4th; P. R. Hutchinson, Nov. 10th.

Lts. to be actg. Capts. while empld. as Capts. (Grade A):—W. Sutherland, from (K.B.), Aug. 28th; H. H. Chivers, Nov. 11th; E. Brown, Nov. 12th.

Sec. Lts. (actg. Lts.) to be actg. Capts. while empld. as Capts. (Grade A):—H. J. L. Greatwich, T. Stevenson, Oct. 5th.

Lts. to be actg. Capts. while empld as Capts. (Grade B):—P. A. Barron, July 1st; J. S. Reid, July 31st; J. P. Barrett, A. G. Berry, E. A. B. Carter, W. R. Carrick, A. F. Hambly, W. L. Hill, D.S.C., F. R. H. Logan, G. C. C. Pentland, S. Purkis-Ginn, (Hon. Capt.) T. N. Weguelin, Aug. 1st; W. R. B. Allen, Aug. 28th; J. N. Longfield, M. Tod,

Sept. 1st; E. M. Cashmore, Sept. 12th; G. M. Wingate, Oct. 4th; W. Oddey, Oct. 14th.

Sec. Lts. (actg. Lts.) to be actg. Capts. while empld. as Capts. (Grade B):—(Hon. Lt.) E. F. Boultbee, C. E. Hodges, W. R. Munro, L. M. Nava, C. G. Stevens, Aug. 1st; (Hon. Lt.) J. C. Boughton, (Hon. Lt.) J. A. Rossi, Sept. 1st; L. E. Carter, R. C. Clements, from (Ad.), F. B. Woods, Oct. 4th.

Sec. Lts. to be actg. Capts. while empld. as Capts. (Grade B):—(Hon. Lt.) G. F. Antell, (Hon. Lt.) P. M. George, J. Leyland, (Hon. Lt.) A. R. Mutter, Aug. 1st; F. J. Pope, Aug. 12th; Lt. S. W. Symons to be Lt. (Grade A), from (A.), Oct. 31st.

A. E. Bartlett (Hon. Lt., R.E. Service) is granted a temp. commn. as Lt. (Grade A), Aug. 13th, seny. April 1st.

Sec. Lts. to be actg. Lts. while empld. as Lts. (Grade A.):—F. G. Farrell, April 1st; (Hon. Lt.) V. H. Tait, July 1st; J. J. B. Campbell, J. F. Earle, G. Kitchin, Aug. 1st; W. Muir, Aug. 9th; H. Buxton, T. G. Kennard, H. J. Lucas, S. H. Reynolds, L. T. W. Sanderson, Oct. 4th; (Hon. Lt.) E. J. Girdler, K. B. Sylvester, Oct. 5th.

Sec. Lts. to be actg. Lts. while empld. as Lts. (Grade B):—R. Betts, A. R. B. Gill, H. W. Henchie, July 1st; F. A. Mills, F. B. Reed, (Hon. Capt.) W. W. Reilly, from (Ad.), July 31st; (Hon. Lt.) J. C. Boughton, R. L. Burdon-Sanderson, C. S. Crocker, J. Corrall, (Hon. Lt.) A. J. Dick, (Hon. Capt.) S. K. D'A. de Ferrars, H. W. Dunk, W. E. Feldwick, (Hon. Capt.) F. Grave, D. F. Hollins, W. Hill, (Hon. Lt.) E. G. A. Jones, D. C. Manuel, W. B. Morison, (Hon. Lt.) H. H. Mitchell, (Hon. Lt.) H. M. Over, (Hon. Lt.) J. A. Rossi, A. W. Summers, C. G. Stevens, W. H. Spann, F. Wiltshire, W. W. Winterbottom, Aug. 1st; H. Hanson, Aug. 20th; F. M. Hewett, A. W. Hatfield, C. A. Longhurst, H. J. Thomas, J. West, Sept. 1st; F. H. Bartlett, (Hon. Lt.) A. Daniels, C. J. F. Kynaston, A. E. Read, (Hon. Lt.) P. S. Woodroffe, D. F. Winch, Sept. 12th; R. Guy, Oct. 1st; E. S. Baker, W. B. Francis, H. R. Hardy, (Hon. Lt.) J. R. Jones, H. A. Paton, F. M. Pepper, W. P. W. Smith, A. H. Scaife, C. H. Strife, F. A. Skoulding, from (Ad.), T. Walker, Oct. 4th; F. J. Machennan, Oct. 20th; (Hon. Lt.) F. H. Astle, Oct. 29th; A. F. Loveday, Nov. 1st; (Hon. Lt.) H. J. O. Barnett, A. H. James, S. D. A. Jolly, Nov. 2nd.

The following are granted temp. commns. as Sec. Lts. (Grade A), seny. April 1st:—L. J. J. Muran (temp. Capt., Gen. List), and to be Hon. Capt., June 6th; R. Alston (Capt., R. W. Kent R., T.F.), and to be Hon. Capt., Oct. 22nd.

Lt. N. A. Ayres to be Sec. Lt., and to be Hon. Lt., from (Admin.), Nov. 1st.

Lt. R. G. Dalziel to be Sec. Lt., and to be Hon. Lt., from (A.), Nov. 1st.

Sec. Lts. (Admin.) to be Sec. Lts. (Grade A):—B. Williams, June 1st; W. B. Fredericks, July 1st; E. W. Shaw, Oct. 17th; H. L. Vahey, Oct. 23rd.

H. W. Sharman (Sec. Lt., E. Surr. R., T.F.) is granted a temp. commn. as Sec. Lt., (Grade B), Oct. 26th, and seny. April 1st.

To be Sec. Lts. (Grade B) and to be Hon. Lts., from (A.):—T. J. Benson, E. J. C. Bockett, S. Field, Oct. 26th; W. E. Goodyear, Nov. 4th; P. Allden, Nov. 9th; J. Murch, Nov. 10th.

To be Sec. Lts. (Grade B), and to be Hon. Lts., from (O.):—C. E. Kennedy, G. L. Ziegler, Oct. 26th; N. H. de V. Heathcote, Nov. 2nd.

To be Sec. Lts. (Grade B), and to be Hon. Lts., from (Admin.):—C. D. B. Stiles, Oct. 18th; D. J. W. Page, Nov. 10th.

Sec. Lts. (Admin.) to be Sec. Lts. (Grade B):—B. J. Beech, H. W. Davidson, Sept. 7th; H. S. Shaw, A. F. B. Cannon, Oct. 1st; R. E. Pudney, S. Maunder, H. T. Mackie, C. H. Ivatts, W. Best, G. F. Mitchell, Oct. 2nd; A. L. Hookham, R. S. Lewis, Oct. 8th; R. G. Wells, S. S. Dillingham, D. Rawley, W. H. Hitch, C. M. S. Churchill, H. Ellingham, A. C. Merriel, D. J. Beaumont, Oct. 9th; E. R. Veneer, F. D. D. Gaussen, H. Gamage, J. H. Davie, J. A. Currie, L. H. Skelton, Oct. 12th; T. A. G. Strickland, Oct. 20th; J. Winslow, Oct. 26th; F. W. Waller, Nov. 1st; A. Cole, G. Workman, Nov. 9th; G. H. Ellis, Oct. 30th; P. D. Hind, P. F. Cullen, Nov. 5th.

Sec. Lt. (Hon. Lt.) E. M. Wood to be Sec. Lt. and to be Hon. Lt., Nov. 7th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Grade B):—A. E. Elmes, Sept. 7th; R. E. Townshend, Oct. 2nd; C. F. Murrin, R. M. Langley, Oct. 12th; C. W. Tuck, Oct. 18th; A. R. M. Carse, Oct. 26th; P. E. Towler, Nov. 7th.

Sec. Lt. A. W. R. Trusler (late Spec. Res., R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (Grade B), Sept. 7th.

J. W. Lockhart is granted a temp. commn. as Sec. Lt., Nov. 18th.

The surname of Sec. Lt. (actg. Lt.) McL. N. Staight is as now described, and not as in "Gazette," Nov. 5th.

Medical Branch.—The following are granted temp. commns. as Capts.:—P. J. Flood (late temp. Capt., R.A.M.C.), Nov. 20th; D. J. Cannon, C. L. McDonogh, Nov. 21st.

The following are granted temp. commns. as Lts.:—J. W. Healy, Nov. 18th; A. Briscoe, M. M. Price, Nov. 19th; M. J. Smyth, Nov. 20th; E. G. O'Gorman, Nov. 21st.

Dental Branch.—A. G. Marks is granted a temp. commn. as Lt., Nov. 13th.

Chaplains Branch.—The following are granted temp. commns. as Chaplains, with the relative rank of Capts.:—Rev. J. A. Chesterton, Nov. 18th; Rev. E. A. Gillespie (late temp. Chapln. to the Forces, 4th Class, A.C.D.), Rev. G. F. Naylor, Nov. 19th.

Memoranda.—Capt. G. Ralston to be actg. Maj. whilst holding a special appt. at the Ministry of Munitions, Nov. 1st.

Capt. C. O. F. Modin, D.S.C., is granted the hon. rank of Maj., Oct. 25th.

Capt. (temp. Maj.) E. J. Baker relinquishes his commn. on account of ill health, Nov. 23rd.

War Office, Nov. 25th.

REGULAR FORCES.—Establishments.—R.F.C.—Mil. Wing.—Experimental Officer, 1st Cl. (Graded as an Equipt. Officer, 1st Cl.).—Sec. Lt. (temp. Lt.) D. R. Pye, Spec. Res., from an Equipt. Officer, 2nd Cl., and to be temp. Capt. whilst so empld., March 26th, 1918.

FROM THE COURT CIRCULAR.

Buckingham Palace, Nov. 23rd.

The following were severally introduced into the presence of The King, when His Majesty invested them with the Insignia of the respective Divisions of the Orders into which they have been admitted:—

The Most Distinguished Order of St. Michael and St. George.—Companion.—Brigadier-General Alfred Huggins, R.A.F.

The Distinguished Service Order.—Brig.-Gen. Cecil Marendin, R.A.F.; Lt.-Col. John Baldwin, R.A.F.; Lt.-Col. Alan Dore, R.A.F.; Lt.-Col. Clinton Maund, R.F.C.

The Distinguished Service Cross.—Capt. Harry Nunn, R.A.F.; Capt. Leopold Wilkins, R.A.F.

His Majesty then conferred decorations as follows:—

The Military Cross and Bar.—Capt. Paul Bulman, R.A.F.; Capt. John Trollope, R.A.F.

The Military Cross.—Capt. Richard Starley, R.A.F.; Capt. William Staton, R.A.F.; Capt. Henry Stuart, R.A.F.; Lt. John Gordon, Aus. F.C.; Lt. Leonard Handford, R.A.F.; Lt. Ramund Hart, R.A.F.; Lt. George Hayward, R.A.F.; Lt. Charles Hore, R.A.F.; Lt. Peter MacDougall, R.A.F.

The King, accompanied by the Prince of Wales and Field-Marshal the Duke of Connaught, rode to Hyde Park this afternoon and held a review of the discharged sailors, soldiers, and airmen, officers and men of both Home and Overseas Forces, drawn mainly from the London Area, who are entitled to wear the silver war badge.

In attendance upon his Majesty on horseback was Maj.-Gen. F. H. Sykes (Chief of the Air Staff).

Admiralty Promotion

The following promotion has been made:—

Nov. 19th.—Lt. C. E. Maude, to rank of Lt.-Comdr., seny. Nov. 15th.

OFFICIAL COMMUNIQUE.

G.H.Q. Communiqué

Nov. 23rd, 7.31 p.m.—A number of aeroplanes and quantities of rolling-stock have also passed into our possession.

THE CASUALTY LIST.

NAVAL.

Reported Nov. 25th.

Died of Wounds as a Prisoner of War.—Flt. Sub-Lt. Charles W. Greig, R.N.

MILITARY.

Reported Nov. 20th.

The following officers, who were prisoners in Austria, have been released:—

Bevington, Lt. R. J., R.F.A., attd. R.F.C.; Gilchrist, Lt. W., Rif. Brig., attd. R.F.C.

Reported Nov. 21st.

The following officers who were prisoners in Turkish hands have been released:—

Evans, Maj. A. J., M.C., R.F.C.; Hill, Lt. C. W., R.F.C.; Lander, Lt. T. E., M.C., High. L.I., attd. R.F.C.; Welman, Lt. J. B., R.F.A., attd. R.F.C.

Australian Force.—Heathcote, Lt. L. W., F.C.; Parkinson, Sec. Lt. V. J., F.C.; Rutherford, Capt. D. W., F.C.; Smith, Sec. Lt. L. H., F.C.

Indian Army.—Atkins, Capt. B. S., I.A., Inf., attd. R.F.C.; Floyer, Lt. E. A., M.C., I.A.R.O., attd. R.F.C.

Reported Nov. 23rd.

Canadian Force.—Missing.—Rodger, Lt. W. A. Man. R., attd. R.A.F. Thomson, Lt. J., Can. Eng., attd. R.A.F.

Casualties among Wt.Os., N.C.Os., and Men. The Dates are those of the Official List.

Nov. 14th.—The following soldier, who was a prisoner of war in Germany, has now arrived in England:—

R.F.C.—McMaster 1840 D.

Died.

Nov. 13th.—A.F.C.—King 110 G. C. D.; Newton 1778 S. H.

Nov. 15th.—A.F.C.—Martin 1253 A.

Wounded.

Nov. 13th.—A.F.C.—Millar 1769 D. McL.

Previously reported Missing, now reported not Missing.

Nov. 13th.—A.F.C.—Parr 2640 T. E.

AIR FORCE.

Reported Nov. 21st.

(First List.)

Killed.—Duncan, Sec. Lt. T. W.
Flowers, Capt. H. F.
Morgan, Lt. B.
Whittaker, Sec. Lt. F. C.

Died.—Courthope, Capt. W. G.
Jeppe, Lt. F. A.
Mumford, Sec. Lt. L. R.
Quigley, Capt. F. C., M.C., D.S.O.
Wright, Lt. L. R.

Wounded.—Fyson, Lt. R. C.; Hamley, Lt. N. H.; Hursthouse, Capt. L. F.; Osborne, Sec. Lt. S. J.; Shutes, Lt. R. F.

Missing.—Bullough, Sec. Lt. J.; Dixon, Sec. Lt. H. G.; Dobeson, Lt. R. G.; Lightbody, Sec. Lt. J. D.; Paget, Sec. Lt. A.; Price, Sec. Lt. O.; Radley, Lt. J. E.; Reid, Lt. J.; Shackleton, Sec. Lt. W.; Sissing, Sec. Lt. A. E.; Walford, Capt. W. G.; Wiener, Lt. L. de V.

Previously reported Missing, now reported Prisoners of War.—
Bowater, Capt. A. V.
Cairns, Sec. Lt. W. T. J.
Gillett, Sec. Lt. W. H. C.
Johnson, Sec. Lt. W. J.

Interned.—Chisholm, Capt. J. F.

(Second List.)

Killed.—Birkett, Sec. Lt. H.
Camm, Sec. Lt. P.
Cole, Sec. Lt. W. T.
Davidson, Sec. Lt. R. W.
Derwin, Lt. E. C. E.
Hale, Sec. Lt. P. R.
Moir, Sec. Lt. G. A.

Died of Wounds.—Ward, Sec. Lt. H. B.

Died.—Harvey, Lt. R. W.

Drowned.—Domegan, Lt. C. P.

Wounded.—Andrews, Sec. Lt. J.; Baldwin, Sec. Lt. H.; Berry, Sec. Lt. A.; Browne, Capt. A. D. C.; Cockburn, Sec. Lt. J.; Corker, Lt. A. F., D.F.C.; Nutter, Sec. Lt. V.

Missing.—Berry, Sec. Lt. H. J.; Bowles, Lt. F. S.; Curtis, Lt. H. J.; Harcourt-Vernon, Capt. A. A.; Gaze, Lt. I. O.; Newstead, Sec. Lt. C. W.

Previously reported Missing, now reported Prisoners of War.—
Darby, Sec. Lt. E.
Powell, Capt. F. G.
Richardson, Sec. Lt. J. B.
Smith, Capt. A. F.

Previously reported Missing, now reported Wounded and Prisoner of War.—Bird, Lt. B. A.



THE TWO DEMANDS

The demands of the Government during the war have proved times without number the absolute necessity for perfect organization and equipment.
The demands in the War of Commerce that is just beginning will be equally exacting.
It is then that the firms who specialize will be in the best position to meet these demands.

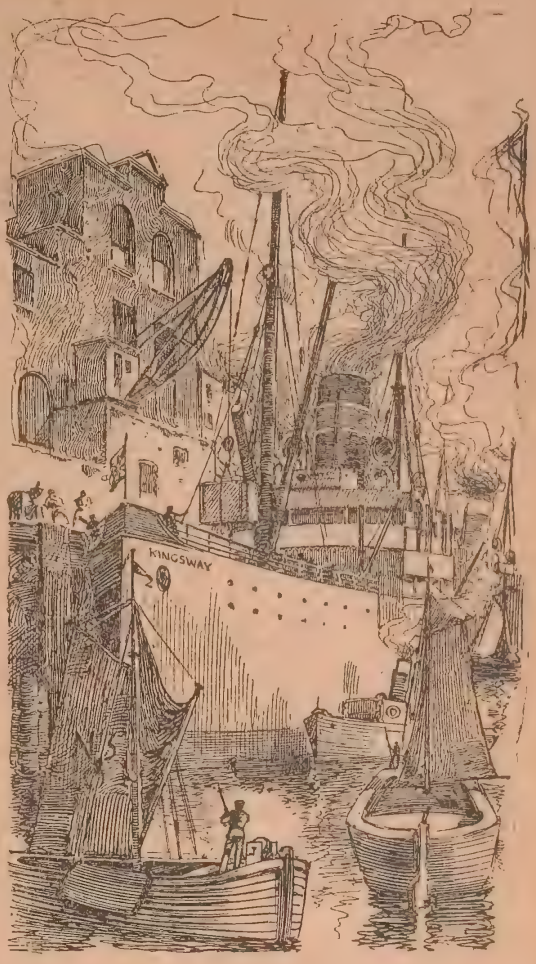
During the War we specialized in the production of

Auto Products and Pressings

and intend to continue in this work in Peace time.
We therefore suggest that firms who are interested should communicate to us their requirements.

SUCKLING

KINGSWAY HOUSE,
Albion St., Birmingham.
London: Morley House, Holborn Viaduct, E.C.1.



1919.



CADETS KILLED.—Archibald, W. A.
Binnie, A. D.
Eastwood, R. G.
Gibson, V. F.
Kaye, A. E
Nightingale, S.
Speer, J. R.
Wood, J.

Reported Nov. 22nd.

KILLED.—Beresford, Sec. Lt. J. H. F.
Brown, Lt. J. S.
Griffiths, Sec. Lt. R. H.
Harris, Capt. T. W. S.
Jackson, Sec. Lt. F. J.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Mackenzie, Lt G. O.
DIED OF WOUNDS.—Gill, Capt. K. C.
Osborne, Sec. Lt. D. S.
DIED.—Buchanan, Lt. A. N.
Ferguson, Lt. J. F.
WOUNDED.—Brooke, Sec. Lt. T. G.; Bull, Sec Lt. E. R.; Cooper, Lt.-Col. R. A., D.S.O.; Hodgson, Capt. F. H.; Lane, Sec. Lt. R. V.; Parsons, Sec. Lt. H.; Pemberton, Sec. Lt. F. R.
MISSING.—Brouncker, Sec. Lt. C. C; Carey, Lt. J. G.; Cartwright, Sec. Lt. P.; Dawson, Sec. Lt. E.; Dee, Sec. Lt. D. M.; Hamlet, Sec. Lt. H. A.; Macdonald, Sec. Lt. C. O.; McDonald, Sec Lt. D. C.; Macnamara, Sec. Lt. J. F.; Potts, Sec. Lt. W. J.; Straw, Lt. L. L. K.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—
Burnham, Lt. M. E.
Gondré, Sec. Lt. J.
Patey, Capt. H. A.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Coward, Lt. S. R.

Reported Nov. 23rd.

KILLED.—Christiani, Sec. Lt. F. R.
Clarke, Lt. R. A. R., M.C.
Hall, Sec. Lt. S.
Phillips, Lt. T.
Townsley, Sec. Lt. H. A.
Upfill, Lt. T. H, M.C.
Walker, Sec. Lt. J. C
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Pouchot, Sec. Lt. J. A.
Walker, Capt. W., D.F.C.
DIED OF WOUNDS.—Warman, Sec. Lt. W. A.
WOUNDED.—Gargett, Lt. H. S.; Hinksman, Sec. Lt. F. C.; McCarthy, Lt. W. F.; Mitchell, Sec. Lt. H. W.; Newman, Sec. Lt. E. F.; Robson, Lt. J. S.; Watson, Lt. G. C.; Wood, Sec. Lt. W. V.
MISSING.—Macaulay, Sec. Lt. A. C.; O'Donoghue, Lt. J.; Pugh, Sec. Lt. J.; Russell, Lt. H. W.
CADETS KILLED.—Bailey, H. C.
Currie, J. E.
Dumpson, A. J.
Fleet, E T.
Lloyd, E.
Richardson, A.
Trafford, A. E

Reported Nov. 23rd.

KILLED.—Birchard, Sec. Lt. G F.
Brown, Lt. J. M., D.F.C.
Clemens, Lt. W. E.
Douglas, Capt. B.
Greene, Capt. J. E.
Paice, Sec. Lt. S. C.
Picken, Lt. R. B.
Soulby, Lt. H. W.
Young, Lt. G. F.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Barlow, Capt. R. T.
Boulton, Sec. Lt. N. S
Bunbury, Capt. T. St. P
McBride, Sec. Lt. J. G
Ware, Lt. D. C.
DIED OF WOUNDS.—Goodwill, Lt. E A.
Kibby, Sec. Lt. H. C.
Smith, Lt. G. W. K.
Wakeman, Sec. Lt. M. W.
DIED.—Hardy, Sec. Lt. J.
Slocombe, Lt. D. W.
Touchard, Lt. G. F.
WOUNDED.—Chalmers, Sec. Lt. C. W. S., Cook, Sec. Lt. C. R., Hardwidge, Sec Lt R. E., Milbank, Sec. Lt. G. A, Urquhart, Sec. Lt. J. E.
MISSING.—Dowler, Sec. Lt. G. E., Hemmingway, Sec. Lt. A., Howden, Sec. Lt. W. A., Johnson, Lt. E. H., McHardy, Sec. Lt. A. W., McKay, Capt. D. R. G., Pugh, Lt. J E, Richardson, Lt. G. T., Rodger, Lt. W. A., Rosenbleet, Lt. A. M., Smith, Sec Lt. J. H. R., Thomas, Sec. Lt. H. C., Thresher, Sec. Lt. C. E. W., Tresham, Sec. Lt. W. H., Ward, Sec. Lt. L. J. R., Wren, Sec. Lt. H. L.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—
Adams, Sec. Lt. N. F.
Brie, Lt. R. A. C.
Cooke, Lt. P. B.
Home-Hay, Capt. J. B., M.C., D.F.C.
Jenner, Lt. P. C.
Lindley, Capt. A.
Lloyd, Lt. C. B. E.
Naylor, Lt. C. B.
Sparkes, Lt. C. P.
Sproule, Lt E. R. L.
Thomson, Lt. K. W. L.
Usher-Somers, Sec. Lt. C. E.

Reported Nov. 26th.

KILLED.—Baldwin, Sec. Lt. W.
Fox, Sec. Lt. H. C.
Goodearle, Lt. F. R.
Hill, Sec. Lt. A. W.
Hill, Lt. S.
Howells, Sec. Lt. E. L.
MacKenzie, Lt. D. A.
MacLean, Lt. R. S. G.
Mather, Lt. W A.
Murray, Sec. Lt. W. L.
Stephen, Sec. Lt. J. D.
DIED OF WOUNDS.—Lloyd, Sec. Lt R. A. H.
Middleton, Sec. Lt. A. S.
Reynolds, Lt. C. E.
Vande-Water, Sec. Lt. M. G.
Wainwright, Sec. Lt. C. E.
Wood, Sec. Lt. R
DIED.—Dalgleish, Sec. Lt. N. J.
Fenton, Sec. Lt. C. E.
Hill, Lt. A. C. F.
Leslie, Lt. G. B.
Parker, Lt. F. H.
Ponting, Lt. W.
Spong, Lt. R.
Stansell, Sec. Lt. L. B.
Williams, Lt. P. E
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Ely, Lt. F. W.
Wilson, Lt. C. M.
PREVIOUSLY REPORTED MISSING, NOW REPORTED MISSING, BELIEVED PRISONER OF WAR.—Bennett, Lt. H. J.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Norris, Sec. Lt. E. J.
Reveley, Lt. P. T. A.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—
Allan, Sec. Lt. A. M
Anderson, Lt. G. F.
Armstrong, Sec. Lt. R. H.
Bodley, Sec. Lt. W. G. L.
Brandrick, Sec. Lt. A.
Bucknall, Sec. Lt. C. V. A.
Calrow, Lt. R.
Caswell, Lt. G.F.C.
Dunlop, Sec. Lt. G. B.
Edsted, Lt. F.
Goodhugh, Sec. P. H.
Jeffkins, Sec. Lt. E. C.
Judkins, Sec. Lt. O. V
Larrabee, Lt. E. P.
Yates, Lt. J. A.
CADETS KILLED.—Critchley, G. E.
Crook, H. E.
Davis, C. W. J.
Foss, F. K.
Jennings, A. R.
Mossop, R.
Rennie, A. M.
Theobald, C. S.
Wilson, R. B.

Reported Nov. 27th.

KILLED.—Attwater, Sec. Lt. K. F
Carter, Sec. Lt. J.
Dodd, Lt A.
Hooper, Sec. Lt. E. A.
Hutcheson, Lt. C. E.
Jackson, Sec. Lt. W. V.
Leaf, Lt W. H.
Leonard, Sec. Lt. T. L. W.
Malley-Martin, Lt. J.
Morgan, Capt. J. T.
Mulley, Sec. Lt. E. H.
O'Connor, Sec. Lt. R. V.
Pink, Lt. A. L.
Samuelson, Sec. Lt. F. A.
Smee, Lt. J. A.
Taviner, Sec. Lt. E.
Thwaite, P.F.O. M. F.
Topley, Sec. Lt. E. P. A.
DIED OF WOUNDS.—Evans, Sec. Lt. J.
Marks, Lt. L. T.
DIED.—Barnes, Capt. G.
Cote, Lt. J. A. R.
O'Connell, Lt. P. M.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Beck, Lt. T., M.C.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—
Dunn, Lt. M. A.
Hall, Lt. R.
Houlgrave, Sec. Lt. C.
Mitten, Sec. Lt. R. C.
Mucklow, Lt. S. L.
REPATRIATED.—Brodie, Sec. Lt. T. W.; Chisholm, Capt. J. F.; Cox, Sec. Lt. F. B.; Dear, Lt. J. A.; Duff-Fyfe, Lt. M J.; Enright, Sec. Lt. T. N.; Fisher, Sec. Lt. C. C.; Frost, Lt. J.; Fryer, Capt. F. E.; Gooch, Lt. H. C.; Harrison, Capt. W. R. E; Hudson, Lt. F. H.; John, Lt. D. M.; Kingham, Sec. Lt. R. L.; Lister, Lt. J. J.; Lloyd, Lt. A. C.; Locke, Sec. Lt. C. J.; Lockey, Lt. B.; Mars, Lt. W. S.; McDonald, Lt. J. J.; McManus, Sec. Lt G. E.; Munro, Lt. J. G.; Oakley, Sec. Lt. K. S.; Olorenshaw, Sec Lt. J.; Pendleton, Sec. Lt. W.; Peters, Sec. Lt. J. F. J.; Potter, Lt. S. B.; Power, Sec. Lt. H. E.; Read, Lt. J. F.; Smith, Lt. F. L.; Thomas, Sec. Lt. C.; Vance, Lt. J. D.; Wilson, Sec. Lt. M. G.; Wynne-Eyton, Capt. R. M.

CASUALTIES AMONG WT.OS., N.C.OS., AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

NOV. 21st.—New 15538 Serjt. F. S. (Plymouth); Quayle 237904 Pte. J. (Beswick, Manchester);
NOV. 23rd.—Stacey 241670 2nd Pte. W. (Liskeard).

DIED OF WOUNDS.

NOV. 21st.—Lilley 403101 3rd Air Mech. H. P. (Birmingham); McKay 133998 1st Pte. R. (Castle Douglas).
NOV. 23rd.—Kettlewell 120446 1st Pte. A. (Preston); Middleton 216604 Serjt. Mech. W. J. (Woodford Green); Proctor 20640 Cpl.-Mech. J. R. (Kirkcaldy).

DIED.

NOV. 21st.—Richards 242588 2nd Pte H. B. (Southall).

WOUNDED.

NOV. 21st.—Allitt 142880 2nd Pte C. F. G. (Sedgeley); Barnes 263669 2nd Pte T. (Sutton-in-Ashfield); Burrows 102295 2nd Pte. C. W (Lincoln); Eley 286324 3rd Clk. C. (Southwark); Ellis 127505 2nd Pte. A. (Dundee); Emberton 275249 3rd Air Mech. J. (Tunstall); Fraser 6099 Cpl.-Mech. H. (Birkenhead); Gaunt 408173 3rd Air Mech. E (Attercliffe); Gibson 187872 3rd Air Mech. H. (Liverpool); Homan 43294 1st Air Mech. H. (Bethnal Green); Lugton 52776 1st Pte H. C. (Tutsfield); Pearce 12759 Cpl.-Mech. T. W. (Croydon); Pelling 403136 Serjt Mech. W H. (Lewes); Robinson 195421 2nd Pte. J. (Cumberland); Rogers 33079 1st Pte. R. (Willesden); Shepherd 78194 Serjt.-Mech. J. (Eastbourne); Sidebotham 2235 Ch. Mech. G. H. (Wolverhampton); Stevens 147923 3rd Air Mech. R. J. (Aylesbury); Webb 143741 3rd Air Mech. E. T. (Swindon); Webster 104586 3rd Air Mech. L. (Wakefield); Wilkes 133371 3rd Air Mech. T. W. (near Walsall); Wright 105131 3rd Air Mech. A (Pudsey, near Leeds).
NOV. 23rd.—Apter 287099 3rd Air Mech. S. H. (Liverpool); Bell 160694 3rd Air Mech. B. S. (Newcastle-on-Tyne); Bertenshaw 108975 3rd Air Mech. J. (Denton, Lancs); Bickers 108345 3rd Air Mech. H. P. (Hunting-

don); Bowers 130125 1st Pte. F. (Stockport); Brindle 209212 3rd Air Mech. F. (Moss Side, Manchester); Brinlow 54337 1st Air Mech. C. (Hampstead); Butterworth 252297 3rd Air Mech. J. (near Northwich); Clark 407192 1st Pte. E. (Forest Gate); Copeland 88534 1st Air Mech. W. (Rush Green); Deegan 96061 2nd Clk. A. (Edinburgh); Eagles 98607 3rd Air Mech. W. (Carlisle); Easterbrook 141850 3rd Air Mech. R. (Saltcoats); Gaudin 43270 3rd Air Mech. M. (Crouch End, N.); Gill 37562 3rd Air Mech. H. (Bradford); Glennie 97275 1st Air Mech. A. D. (Willesden); Golder 144151 1st Air Mech. O. C. (Dover); Henstock 107797 3rd Air Mech. G. (Ripon); Holmes 89197 3rd Air Mech. C. H. (Hackney Road); Israel 82066 1st Pte. S. (Mile End); King 32906 1st Air Mech. W. (Derby); Lee 112207 3rd Air Mech. A. (Haslingden); Lee 115243 3rd Air Mech. W. (Salford); Le Monnier 136221 3rd Air Mech. N. J. (St. Heliers); Leonard 88736 1st Pte. T. (Wishaw); Marrows 98262 3rd Air Mech. A. W. (Gainsborough); McGovern 114787 2nd Pte. J. (Dundee); Peet 134579 3rd Air Mech. A. (Mansfield); Pugh 406700 1st Air Mech. P. W. (Luton); Rogers 241829 3rd Air Mech. H. R. (Weston-super-Mare); Selby 104171 3rd Air Mech. J. (Haggerston); Shipman 104043 1st Air Mech. H. (Bradford); Smith 19778 3rd Air Mech. R. A. (Dudley); White 67764 3rd Air Mech. H. H. (Seacombe), Wilks 3423 Serjt.-Mech. C. R. (Great Ayton); Wood 160439 3rd Air Mech. T. (Bolton).

PERSONAL NOTICES.

NAVAL.

Death.

SYMONDSON.—Capt. Vernon Francis Symondson, R.A.F., late R.N.A.S., who was accidentally killed in France on Nov. 13th, was the eldest son of the late Mr. and Mrs. S. V. Symondson, of Walton Lodge, Banstead, Surrey. He was 25 years of age.

Engagement.

STEPHENS—FINN.—The engagement is announced between Capt. Maurice H. Stephens, R.A.F. (late R.N.A.S.), youngest son of Mr. J. Stephens, Toronto, Canada, and Marjorie, younger daughter of Mr. Alexander Finn, late H.B.M. Consul-General for Chile, S. America, and Mrs. Finn, 2, Park Road, Richmond, Surrey.

Birth.

BABINGTON.—On Nov. 20th, at 6, Upper George Street, Bryanston Square, the wife of Lt.-Col. John Babington, D.S.O., R.A.F. (Lt. R.N. and late Wing-Comdr. R.N.A.S.), of a daughter.

MILITARY.

Deaths.

BRODIE.—Capt. Philip Wyndham Brodie, 1st Seaforth Highlanders, attached R.A.F., who died from pneumonia on Nov. 18th in a hospital at Taranto, was the youngest son of Mr. and Mrs. Brodie, Woodlands, Cheltenham, and the husband of Irene Brodie. He was 31 years of age.

COLLINS.—Capt. C. Frank Collins, late R.F.C., died of pneumonia on Nov. 17th at 15, Lithos Road, Hampstead.

FOX RUSSELL.—Capt. Henry Thornbury Fox Russell, M.C., R.A.F., late 6th Royal Welsh Fusiliers, who was killed on Nov. 18th in an aeroplane accident, was the third son of Dr. and Mrs. Fox Russell, Holyhead, and brother of the late Capt. John Fox Russell, V.C., M.C., R.A.M.C. He was 21 years of age.

HELM.—Capt. Henry Paul Dundas Helm, R.A.F., late Border Regt., whose death was announced recently, was the eldest son of Dr. and Mrs. Helm, of Portland Square, Carlisle. He was educated at Lime House Preparatory School, Wetheral, and Repton, where he was a member of the O.T.C. On leaving school he went up to Trinity College, Cambridge, and in 1914 he began the study of medicine at Edinburgh University, where he passed the first M.B. examination. When the war broke out he at once volunteered for active service. He was gazetted to the Border Regt., and went out in November, 1914, to join the 2nd Battalion, with which he took part in the severe fighting of that winter and the following year. In March, 1916, he was promoted captain, and shortly afterwards transferred to the Royal Flying Corps. After qualifying as an observer he had nine months' continuous flying service, taking part in the first battle of the Somme. In 1917 he was promoted wing adjutant, and after doing duty at home stations he returned to the front last June as a wing adjutant in the Independent Air Force. During the recent fighting he had done excellent service, which received the high commendation of his commanding officer. Under the strain of this heavy work his health gave way, and he was invalided home.

JENKINS.—Lt.-Col. Leoline Jenkins, D.S.O., M.C., R.A.F., who died on Nov 20th of pneumonia, after influenza, at a military hospital, was the only child of Mrs. Leo Jenkins, 42, Derwentwater Road, Acton, W.3. Col. Jenkins was awarded his D.S.O. in the New Year's Honours List for 1918, and his Military Cross, gazetted June 2nd, 1916, was awarded for Distinguished Service in the Field. At the time of the earlier award Col. Jenkins was Captain R.G.A. (T.F.), attd. R.F.C.

JOHN.—Lt. Wilbur Arnold John, R.A.F., who was first reported missing and then killed on July 31st, was the younger son of Mr. and Mrs. Richard John, of Valparaiso, Chile, where he was born in 1895. Although he had only recently arrived in Valparaiso, having been eight years in Europe to complete his education, he volunteered immediately on the outbreak of war for service, and left with the first contingent to return to England to enlist. After training with the Inns of Court, he received his commission in the spring of 1915, and was gazetted to the Sussex Yeomanry. Being a good linguist, he was advised to join the Intelligence Corps, and after completing his course with merit, he obtained an appointment in the Intelligence Department of the Northern Army. In September, 1915, he was sent to France, and was attached to the Seventh Corps, and completed his final course in the first firing line with the 1st/6th Staffordshire Regiment. In the following January he was attached to the 18th Corps. Desiring more active duties, he decided to transfer to the Royal Flying Corps at the beginning of this year. He completed the course for observer in July, and was sent again to France, where he remained until his death.

PLENTY.—Maj. Edward Pellew Plenty, R.A.F., who died from pneumonia following influenza at Huntingdon on Nov. 21st, aged 21 years, was educated at the Newbury Grammar School and St. Paul's School. On leaving school he enlisted in a Public Schools Battalion in Sept., 1914, at the age of 17, and receiving a nomination for Sandhurst he entered in Nov., 1914, and there became senior serjeant of G Company. On passing out he was gazetted to the Manchester Regiment, but having volunteered for flying he was sent at once for instruction, and on gaining his wings joined a squadron in France. In April, 1916, he was made flight-commander, being then 18 years old. He returned to England in May, and helped to train a new squadron then being formed at Huntingdon, with which he went out again to France in Oct., 1916. After serving a period there he was employed as flying instructor in Norfolk, and went from there to York as Brigade examining officer to the Northern Training Brigade. He was promoted to his majority last May, when he was only 20, and was given a squadron in Oct. He was twice mentioned in dispatches.

SCARR and ALLEN.—Lt. Scarr, Aust. F.C., and Lt. Geoffrey Allen, Royal Warwickshire Regt. and R.A.F., who had been flying in a formation of five, were killed by the fall of their machine recently. The accident happened when the signal was given to break away on the return journey. Lt. Geoffrey Campbell Scarr, I.A.R.O. and R.A.F. was the only son of Mrs. Scarr, Killara, Sydney, N.S.W. He was 26 years of age.

WEBSTER.—Lt. John Webster, M.C., 14th Squadron, R.A.F., who was killed in action in Palestine on Sept. 21st, was the only son of Dr. J. A. Webster, late of Launceston and Sorell, Tasmania.

Engagements.

LAWS—MATHEWS.—The engagement is announced and the marriage will shortly take place, between Major Frederick Charles Victor Laws, Lincolnshire Regt. and R.A.F., and Madeline Grace Mathews, daughter of Mr. and Mrs. S. Withers, Port Hill, Shrewsbury.

PRESTON—WELLS.—The engagement is announced between Lt. Raphael Chevallier Preston, R.E., attd. R.A.F., son of the late Capt. John Preston, R.M., of Athlone, Co. Westmeath, and Mrs. Preston, of Kew Gardens, and Aspall Hall, Suffolk, and Margaret, elder daughter of Sidney H. Wells, Director-General of Technical Education, Egypt.

RAYNOR—WOOD.—The engagement is announced of Lt. A. H. Raynor, R.A.F., late R.F.C., youngest son of Mr. G. G. Raynor, Croydon, to Mary Joyce Wood, R.A.F., M.T., only daughter of the Rev. Hugh and Mrs. Wood, of Whitchurch, Aylesbury.

Marriages.

BARTON—HARRIS.—On Nov. 21st, at the Parish Church, Watford, Lt. Sydney Frederick Barton, R.A.F. (late R.F.C.), eldest son of Mr. and Mrs. F. S. Barton, Forest View, Walthamstow, was married to Irene Ruth (late R.F.C.), eldest daughter of Mr. and Mrs. Leo E. Harris, Winsmore Lodge, Watford, Herts, and late of Wolverhampton, by the Rev. C. F. Ayerst.

FOOT—BOXILL.—On Nov. 16th, at St. James's, Piccadilly, Capt. C. J. Foot, R.F.A., attd. R.A.F., third son of Mr. and Mrs. W. H. Foot, 36, Carlton Road, Putney, was married to Margaret Cecil Matheson, youngest daughter of Dr. and Mrs. Boxill, of Buttalls, Barbados, by the Rev. C. K. Gill.

PARK—PARISH.—The marriage took place on Nov. 25th, at Christ Church, Lancaster Gate, of Major Keith R. Park, M.C., R.A.F., son of Professor J. L. Park, of Aberdeen and New Zealand, and Miss Dorothy Margarita Parish, daughter of Major and Mrs. Woodbine Parish, of 2, Stanhope Street, Hyde Park. The Bishop of Hull performed the ceremony, assisted by the Rev. H. N. Bate, vicar of the parish.

YANDELL—HANCOCK.—On Nov. 2nd, Lt. F. C. Yandell, R.E.K., Yeo. and R.A.F., elder son of Rev. F. F. Yandell, B.D., LL.D., and Mrs. Yandell, St. Helier, Jersey, was married by special licence to Gladys May, eldest daughter of Mr. and Mrs. Hancock, Ivy House, White Roding.

Births.

BICE.—On Nov. 20th, at 7, Garlinge Road, Brondesbury, to Dolly (née Barder), wife of the late Lt. E. J. Bice, M.C., R.A.F. (killed in France on Aug. 8th)—a daughter.

STEVENSON.—On Nov. 20th, at 46, Collingwood Avenue,

Muswell Hill, N., Janet, the wife of Major D. Fasken Stevenson, D.S.O., M.C., R.A.F., of a daughter.

* * *

Lt. E. T. Smart, R.F.C. (No. 2 Squadron), has been missing since March 27th, 1918, on sector Bray-sur-Somme to Roye. If any repatriated prisoners of the R.A.F. can give any information it will be gratefully received by Mrs. Smart, 20, Manor Grove, Tonbridge, Kent.

* * *

BYASS.—On Nov. 22nd, at Stow Lodge, Gerrard's Cross, "Mollie," the beloved wife of R. C. Byass, Oxfordshire Hussars, attd. R.A.F.

AIR FORCE.

Deaths.

ARMSTRONG.—Capt. D'Urban Victor Armstrong, D.F.C., R.A.F., who was killed in France on Nov. 13th, was the younger son of George S. Armstrong, Empangeni, Zululand, South Africa, and brother of Mrs. Edward A. Royds, Reed Pond House, Gidea Park, Essex.

BAIRD.—Lt. William D. H. Baird, R.A.F., was killed on Nov. 23rd while on a flight over mid-Kent.

BUTLER.—Thomas Henry Butler, R.A.F., of 11, City Road, London, E.C.1, who died on Nov. 23rd at the Leeds Military Hospital, of pneumonia, was 31 years of age.

HODGSON.—Capt. F. H. Hodgson, R.A.F., who was killed whilst flying in France on Nov. 19th, was the only surviving son of Mr. C. H. Hodgson, Wharton, Sherborne. He was 22 years of age.

HORRIDGE.—Capt. John Leslie Horridge, R.A.F., who was killed whilst flying in England, was the youngest son of Mr. and Mrs. John Horridge, Bolholt House, Bury, and of Plas Llanfair, Llanfair, P.G., Anglesey. He was 22 years of age.

HUMBLE-CROFTS.—Capt. Arthur Maughan Humble-Crofts, R.A.F., who died at the Military Hospital, Castle Mount, Dover, on Nov. 19th, from pneumonia following influenza, was the fourth son of Prebendary and Mrs. Humble-Crofts, of Waldron, Sussex, and the husband of Margaret Humble-Crofts (*née* Margaret Cooper), of "Framba," 103, Dartmouth Road, Willesden Green, N.W.2. He was 35 years of age.

KIBURZ.—Lt. Leo A. Kiburz, R.A.F., nephew of Gen. J. W. Stewart, Canadian Railroad Troops, France, died on Nov. 24th, at Heatherden Hall, Iver Heath, Bucks, residence of Lt.-Col. Grant Morden, of pneumonia, following influenza.

NORMAN.—Lt. Alfred George Bathurst Norman, R.A.F., who was accidentally killed whilst flying on Nov. 20th, was the eldest son of the Rev. Harry Bathurst Norman, 10, Palmeira Square, Hove. He was 19 years of age.

PAULL.—Lt. Charles W. T. Paull, R.A.F., who died on Nov. 18th at the British Red Cross Hospital, Boulogne, from pneumonia following influenza, was the husband of Evelyn Augusta Paull, of 7, Halford Road, Richmond, Surrey. He was 29 years of age.

WODEHOUSE.—Lt. Charles E. Wodehouse, R.A.F., who died at Eastbourne on Nov. 18th as the result of an aerial collision, was the dearly-loved fourth son of Guy and Elisa Wodehouse, of Culipran, Chile, nephew of Maud Lambert and Ethel Wodehouse. He was 19 years of age.

WOOLLETT.—Capt. J. C. Woollett, R.A.F., who died of pneumonia on Nov. 16th at Hythe, was the son of Dr. and Mrs. Woollett, of Streatham.

Engagements.

GARDNER—TAYLOR.—A marriage has been arranged, and will shortly take place, between Maj. Dudley Gardner, R.A.F., only son of Capt. G. J. E. Gardner, solicitor, and Mrs. Gardner, Alverton, Northallerton, and Gladys Marjorie, second daughter of Mr. and Mrs. J. A. Taylor, Ailesbury Road, Dublin.

MURRAY—KELLER.—The marriage arranged between Capt. D. G. Murray, R.A.F., and Miss Phyllis Keller will take place at St. John's, Church Row, Hampstead, on Dec. 12th at 2.30. Friends are invited to the church.

Marriages.

GOSSE—JONES.—On Oct. 15th, at St. Stephen's, Gloucester Road, W., Lt. Reginald Gosse, R.A.F., youngest son of the late Dr. Gosse, of Wallaroo, S. Australia, was married to Helen Lizette, youngest daughter of Mr. and Mrs. Gordon Jones, by the Rev. J. Walton.

PRATT—WOODWARD.—On Nov. 21st, at St. Leonard's, Streatham, Capt. Stuart H. Pratt, R.A.F., only surviving son of Mr. and Mrs. George Pratt, "Carrick," Streatham Park, S.W., was married to May, daughter of Mr. and Mrs. A. C. Woodward, 34, Criffel Avenue, Streatham Hill, by the Rev. A. Brook-Jackson, C.F.

Births.

BUTCHER.—On Nov. 18th, 1918, at the Bognor Nursing Home, Bognor, to Ethel Mabel (*née* Naylor), wife of W. G. Butcher, R.A.F., of Highams Park, Chingford, a daughter.

GREY.—On Nov. 12th, at Batheaston Vicarage, Bath, the wife of Lt. Trevlyn Grey, R.A.F., of a daughter (Ruth Victoria).

GRUNDY.—On Nov. 21st, 1918, at Wyton Manor, Huntingdon, to Joan Johnstone Grundy (*née* Bett), wife of Lt. Robert Milne Grundy, Adjutant, R.A.F.—a daughter.

MERRILL.—On Nov. 9th, at "The Curragh," Ireland, the wife of Lt. Walter A. Merrill, R.A.F. (Montreal, Canada), of a daughter.

PART.—On Nov. 21st, at 62, Burton Court, Chelsea, the wife of Capt. G. M. Part, R.A.F., of a daughter.

SCOTT WILLIAMS.—On Nov. 17th, at the Pembrose Nursing Home, Clifton, Bristol, the wife of Lt. Percy Scott Williams, R.A.F., of a daughter.

A POST-WAR W.R.A.F.?

According to the "Times," it is not unlikely that the Women's Royal Air Force may presently become a permanent service, and that women who signed on for the duration of the war may have the option of remaining in the Force under new conditions.

The Force, of which Mrs. Gwynne-Vaughan is director, numbers 23,000 women, of whom 6,000 were taken over from Queen Mary's Army Auxiliary Corps and 2,000 from the Women's Royal Naval Service; the others were obtained by direct recruiting. Already officers and women are writing in to headquarters asking "If the Women's Royal Air Force continues, may I remain if fit?" A circular is being sent out in order to discover the women's wishes in the matter. No attempt at any demobilisation of this service has taken place, but those women who are married and whose husbands are home on leave are also given leave immediately, and when demobilisation takes place the soldiers' wives will be the first to be demobilised.

There are no members of the Women's Royal Air Force in France. Arrangements had been made for them to go over at the beginning of December, but the Armistice has put an end to any extension of their activities at present.

The "Daily Express," also, understands that so far from the W.R.A.F. being included in the general demobilisation of the women's forces, there is a probability of the members of this branch of the Service being retained as motor-drivers, waitresses, and the like, as well as in the workshops, after peace is signed.

A proposal is under consideration to train and use the women even as fitters and riggers. The Flying Corps—as it then was—was the pioneer of women's employment, and the results obtained, it is urged, justify the retention of the W.R.A.F. on a permanent basis.

R.A.F. CROSS-COUNTRY RUNNING.

Twenty-six teams, represented by nearly 200 runners, took part in a cross-country race at Kenley, on Nov. 23rd, over a 5¾ mile course, and of their number something like 160 completed the distance.

The event was open to all units in the South-Eastern Area of the Royal Air Force. Medals were given to the "placed" teams (each team to consist of eight men, six of whom were to count).

There was also a challenge cup presented by the officers of the South-Eastern Area Headquarters, Covent Garden Hotel, to be held by the winning team, and a silver cup, the gift of Major-General F. C. Heath-Caldwell, C.B., was awarded to the first man home.

A. M. Ridout (Kenley) finished first in 32 mins. 21 secs., Serjt. Clibborn (Halton Park) being second in 32 mins. 54 secs., and A. M. Foy (Kenley) third in 33 mins. 6 secs. The challenge cup and winning team medals were won by the No. 1 Cadet Wing (Shorncliffe) with 94 points. The No. 7 Aircraft Acceptance Park (Kenley) were second with 113 points.

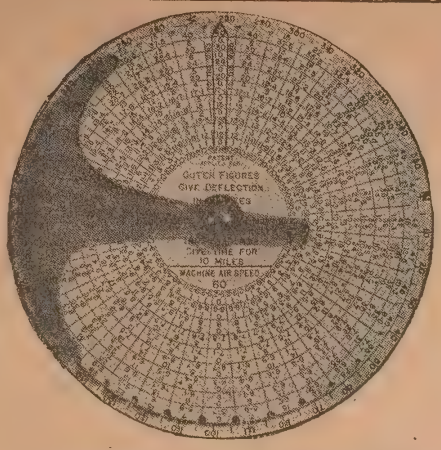
[Which probably explains why so few Air Mechanics were captured in the great cross-country race in France which began on March 21st, 1918.—Ed.]

AIR RAID RESULTS.

A joint meeting of the consultative and executive committees of the Committee on War Damage was held at the Guildhall on Nov. 23rd under the chairmanship of Sir Robert H. Rogers. Mr. Southon, the hon. secretary, submitted returns from town clerks and clerks of Urban and District Councils of casualties by air raids and bombardments. In 66 municipal districts at least 565 persons had been killed, 1,147 injured, and the estimated cost of making good the damage to property amounted to £833,550.

A letter addressed to the Prime Minister by representatives of the National and other churches was read. It stated that "as it is to be a condition of peace that our enemies are to pay for the war damage done to civilians, we cannot think the Government will do other than give effect to your acceptance of the principle of national responsibility before we are immersed in the General Election." The following resolution was passed unanimously, on the motion of the Mayor of Margate, seconded by the Mayor of Ramsgate:—

That a special Committee be appointed to prepare an address to the country for immediate issue in the event of no satisfactory reply being received from the Government by Wednesday next, the purpose of the address to be to secure the election of only such candidates for the new Parliament as will pledge themselves to vote for a resolution on the assembly of Parliament in support of the prayer of the memorial of the Committee on War Damage, namely, that the Government shall indemnify out of national funds all sufferers, either in person or estate from air raids or bombardments since the commencement of the war.



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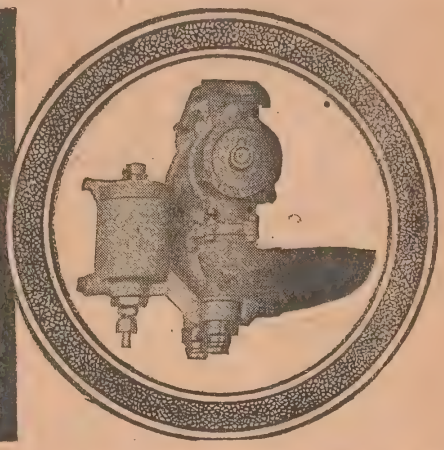
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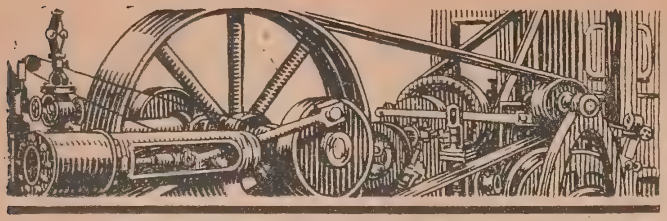
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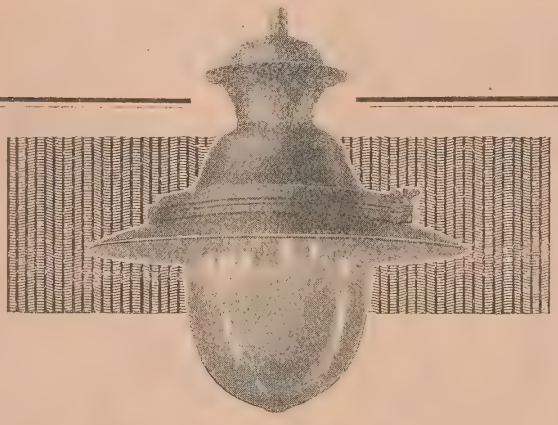
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FIGHTING IN THE AIR.

On Friday, Nov. 8th, the first meeting of the autumn session of the Royal Aeronautical Society was held at the Central Hall, Westminster. A paper entitled "Fighting in the Air" was read by Major Kennedy-Cochran-Patrick, D.S.O., M.C., R.A.F., the chair being taken by Major-General W. S. Brancker, R.A.

Major-General Ruck, chairman of the Aeronautical Society, before asking General Brancker to take the chair, spoke some words of appreciation of the work of the late Captain B. C. Hucks, R.A.F., and spoke of the assistance he had rendered both to the Society and to aeronautics generally. He expressed the sympathy of the Society with the relatives of Captain Hucks in the loss which they had sustained.

The Chairman.

General Brancker said that although the Society had been cramped in its activities during the war, he thought it would have a splendid opportunity of increasing its activities in the future by helping in the development of peaceful aeronautics, particularly with regard to commercial aviation.

At such a moment it might seem hardly fitting to discuss such a subject as fighting in the air, which was about to take its place in history. A more suitable topic would appear to be commercial aviation, how to make money, how to make peace sing. He personally thought that now was the right moment to consider and sum up the wonderful development of fighting in the air.

We had reached a state of efficiency in this respect of which no one ever dreamed, all of which was threatened with extinction unless we managed to develop an artificial means of preserving the fighting spirit and experience of the fighting pilot.

Not long ago there were many who said that the war would be won in the air; he had often said so in the United States. Not one of the things which he had prophesied had come true, but, on the other hand it was doubtful if the majority of people realised what a tremendously important factor aviation had been in winning the great battles. Our superiority in the air had been of great value in winning our victory. Particularly in air fighting we had been superior all this year. The armies on the ground realised this. There was an absolute necessity for maintaining efficiency in this particular branch of air work as a measure of national safety.

Major Cochran-Patrick had served with great distinction for two years and had proved himself an excellent pilot with a brilliant career.

The Lecture.

The entire science of aerial fighting has developed, as everyone knows, since the beginning of this war, in other words in the short space of four years.

To-night I am going to attempt to give you an outline of the various stages through which aerial fighting has progressed to its present state of efficiency, though it would be foolish to claim that we have even begun to realise the methods and tactics which will be employed in the future.

All through the history of aerial fighting we find two main governing factors, and I would ask you to notice how these affect each step. These two factors are:—(1) Field of fire; (2) field of view.

In talking of the latter, I shall be constantly talking of blind spots. By a blind spot is meant anywhere in the sky which is hidden by the planes, tail or fuselage, from the pilot as he sits in his cockpit.

Over and above these two points we have the subject of sights. This subject alone is sufficient for numerous lectures, so that I will only be able to touch upon it to-night. To give you some idea of the difficulties which have been contended with, I would point out that firing and hitting in the air is somewhat akin to shooting a high pheasant with a rifle, one which is doing 100 m.p.h. at that.

I have thought long as to how I could subdivide this lecture in order to make it more clear, but at last decided that it will be best to start at the beginning and go through to the present time, taking each of the points I have mentioned above as they crop up and seeing how again and again they affect the tactics employed and the design of the machines used.

A Primitive Weapon.

When war broke out the aeroplane as a weapon was an entirely unknown quantity. It was recognised that its value for purposes of reconnaissance would be great. It was believed that it might even be useful to demoralise troops and damage factories by dropping bombs, but the idea of fighting in the air was regarded by most as a wild dream of imagination. The original little flight of machines which crossed to France were ordered, I believe, to ram hostile airships on sight, this being the only satisfactory means of attack which they had. Satisfactory, I should add, from the point of view of the admiring spectator on the ground.

I remember being solemnly told when I first joined the R.F.C. (and what is more, I believed it) that the correct procedure on meeting hostile aircraft was this:—If possible overtake him, then dive in front of him, and as you passed do a turn. The air pockets caused by this turn, I was assured, would be quite sufficient to send him crashing to the ground. In the beginning our machines were nearly all of the two-seater type, the few small single-seaters we had (which are known as scouts) were used purely for scouting work, being able to go out, do a reconnaissance, and return very much faster than the two-seaters.

During the first few months of the war machines were allowed to do much as they wished in the air. British and German machines alike carried out reconnaissances and artillery shoots unmolested except by fire from the ground. This did not however suit our Flying Corps; they saw no reason why the German should be given equal chances with ourselves, to gain valuable information, so various methods of attack were tried.

Some attempted to throw rifle grenades or bombs into a German machine from above, with no success whatever. Others, with better results, flew up to point blank range and used rifles, carbines and revolvers. This, however, was a slow method, requiring a vast expenditure of ammunition as well as a crack shot to bring down a machine. Though, nevertheless, incredible as it may seem, Germans were brought down by a few brilliant or lucky shots. The natural development was the introduction of the machine-gun.

The Problem of Sighting.

At this point it is well to consider the difficulties of sighting and aiming in the air. In arranging sights for aerial fighting two things have to be taken into consideration:—(1) The speed of the enemy machine; (2) the speed of the firer's machine.

I would say here that at all the ranges at which aerial fighting is conducted (which are 200 yards or under) the effect of the forces of gravity and air resistance on the path of the bullet are so slight that they may be entirely neglected.

Let us consider first how the speed of the enemy machine affects the sighting. (See Fig. 1.)

Consider the firer to be stationary at B, the enemy machine to be flying across his front along the line XYZ. The firer will have to aim a certain distance ahead of the machine in order to hit it, owing to the time it takes the bullet to travel a certain distance after the trigger is pulled. At 200 yards, as a matter of fact, with a machine doing 100 m.p.h. at right angles to the line of fire, it is necessary to aim 40 ft. ahead of a machine.

This means that if a firer at B points his gun directly at a crossing machine at Y, by the time the bullet reaches Y the machine will be at Z. If, however, he fires at Y when the machine is at X the bullet will hit the machine at Y if XY=40 ft. and BY=200 yds.

If, however, the enemy machine is flying directly along the line YB, either towards or away from the firer, he will hit it if he aims straight at it as the line of flight of the bullet is the same as that of the machine.

Let us now reverse the process and put the firer in the machine firing at a stationary target at B. The bullet will have two velocities acting upon it, that towards B given by the force of explosion and a velocity sideways given by the speed of the machine.

In other words, if the firer is at Y and he point his gun at B and fire, the bullet will be carried sideways and will end up at C. To hit B he will have to fire at A.

If, however, the firer's machine is flying either directly towards or directly away from the target, he will be able to aim straight

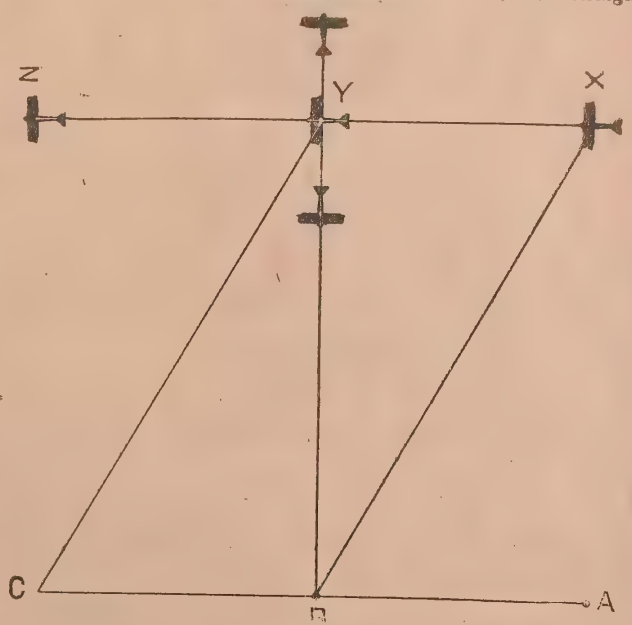
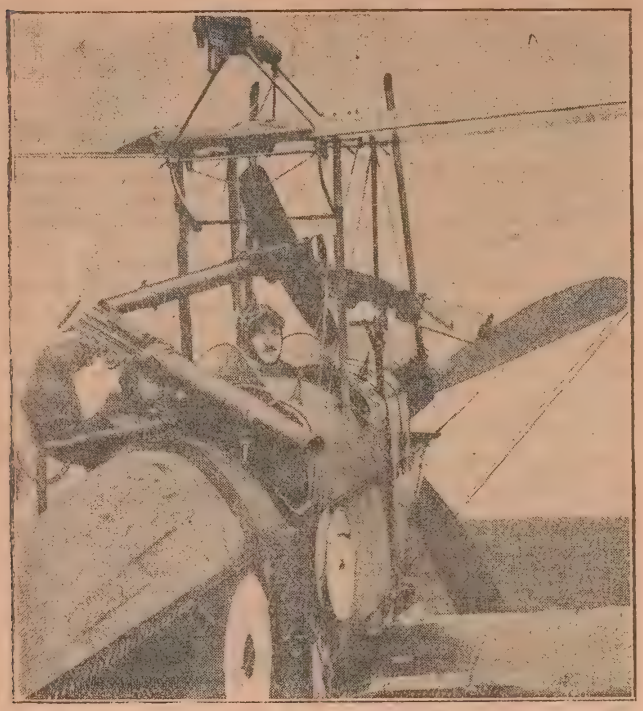


Fig. 1.



An early B.E. Biplane very fully equipped for Aerial Fighting. Note the four machine-guns.

it it, as the velocity imparted by the speed of the machine and that imparted by the explosion are along the same line YB.

It will be understood that for every angle of approach or departure of an enemy machine, and for every different angle which the firer's gun makes with the line of flight of his machine, an apparently different allowance must be made in aim. This allowance is called the deflection, because it is the amount the line of sight must be deflected from the line of fire. I would ask you to remember that word carefully as it will occur whenever we mention sights. "Deflection" is the distance it is necessary to aim off a machine in order to hit it.

The above is a very rough outline indeed of the problems in aerial sighting. It is naturally very much more difficult when both the firer's machine and the target machine are moving. Let us now go back to the start of the war. We will find three types of machines in use:—The tractor two-seater, the pusher two-seater, the tractor scout.

The Weakness of the Tractor.

We find also the Hun flying about more or less unmolested and we find a light machine-gun being introduced. It will be seen that for offence it is necessary to fire forwards, as one cannot attack while running away. Firing forwards in a tractor machine, however, was impossible as the propeller prohibited this, owing to the danger of hitting it. The best that could be done was to set the gun at an angle so as just to miss the propeller. This necessitated a sort of sideways attack and brought in all sorts of complications in sighting owing to the gun firing at an angle to the line of flight.

A few scientific minds worked out the amount of deflection the angle of their gun would necessitate on their machines and set the sights accordingly. Notable among these were Major Hawker, V.C., who mounted his gun on a fast single-seater, which was probably the forerunner of all our modern fighting machines. This method was very unsatisfactory, however; it was especially so in two-seater machines where a movable gun was worked by an observer, owing to the fact that as the gun moved so the deflection allowance for the speed of the firer's machine altered. Moreover, the field of fire was very restricted.

The choice for fighter machines then naturally fell on the pusher type two-seater. Here was an unlimited field of fire and view forwards, the pilot manœuvred the machine, the observer did the shooting. So our first successful fighting machines were of this type, and aerial fighting came to stay.

Adapting the Single-Seater.

Designers both in England and Germany then set to work to build machines solely for the purpose of fighting, and it became evident that the side which would drive off and shoot down the enemy's reconnaissance and artillery machines while protecting its own could be at an enormous advantage.

The single-seater appeared the best type of machine owing to the fact that it could overtake and out-manœuvre the enemy's larger aircraft, but the pilot having only one pair of hands could not both manage the machine and aim and fire the gun. This difficulty was overcome by attaching the gun rigidly to the machine. In order to aim the gun the pilot had to aim the whole machine by means of his flying controls. This is not such a difficult matter as it sounds as machines are very sensitive on the controls—a very slight movement altering the line of sight as much as 20 degs. in a fraction of a second.

The next difficulty was the allowance for deflection owing to the speed of the firer's machine. It has been pointed out that if the gun fires parallel with the line of flight of the machine no allowance for deflection was necessary. By designing for this another problem would be solved.

We have now requirements:—A single-seater with fixed gun firing ahead and parallel to the line of flight of the machine for purposes of attack. With a tractor type of single-seater this meant firing through the airscrew, which revolves at anything up to 1,600 revs. p.m. without hitting it.

The French were first to achieve this by fixing large steel deflectors on to the airscrew blades where they passed opposite the barrel of the gun. These deflected any bullet which struck them, but they also impaired the efficiency of the airscrew so much that only one type of machine was ever fitted with them.

The Synchronising Gear.

The Germans were the next to produce a satisfactory arrangement; this they incorporated in the famous Fokker monoplane, which was the first German machine built solely for fighting that appeared in any quantity on the line.

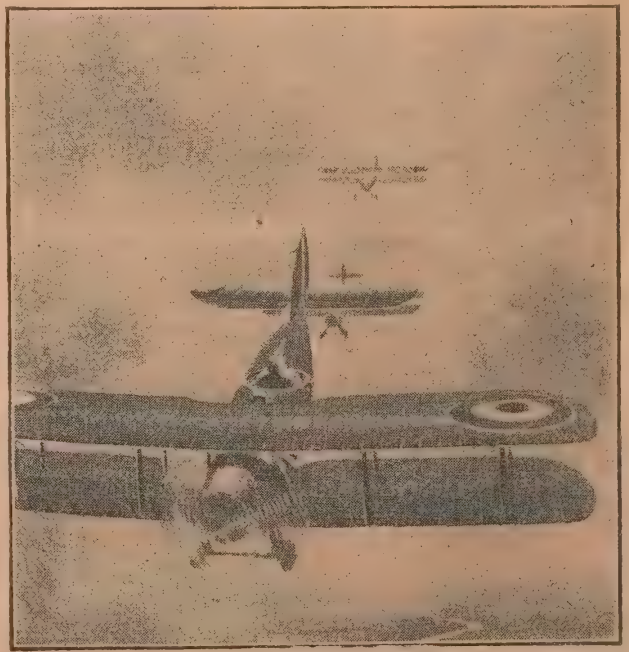
The German method was to employ a synchronising gear. The general idea is that instead of the firer pulling the trigger a gear connected with the engine pulls it at the right moment. The firer controls the gun by throwing the gear in or out of action. The gear, when in action, pulls the trigger every time an airscrew blade comes directly in front of the barrel. The delay in priming the cartridge and exploding the charges gives the airscrew blade just time to get out of the way before the bullet passes, thus ensuring that the blade is not hit. The advent of the Fokker marks a very distinct stage in the history of aerial warfare. It was the first attempt on either side to gain definite control of the air.

Until then fights were few and far between, no definite tactics were used, and formations of machines were practically unseen except where a large number of bombs had to be dropped. The Fokker's tactics were simple at first, they would climb up towards the sun and wait till one of our artillery machines came along intent on the work in hand. Then came a sudden dive, a burst of fire from behind the British machine, and in many cases a bullet through the British pilot's head before he knew where the shots were coming from.

The most common British two-seater at that time was one which had been designed on pre-war lines with the passenger in front. You will see how cramped a position he occupies. Field of fire forwards blocked by the airscrew, to the side by the planes and struts, in fact the only good shot he can get is by kneeling on his seat and firing back over the pilot's head.

Fokker Tactics.

To understand the Fokker's tactics we must remember that so far no satisfactory sight has been brought out which allows for the deflection necessary for the speed of the target machine. He has got over the difficulty as regards the deflection for his own speed by firing straight through the airscrew on his own line of



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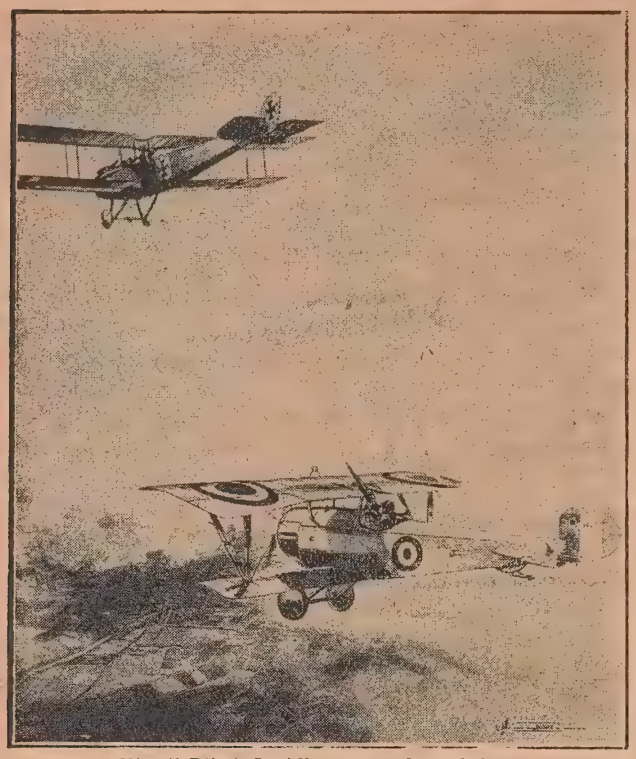
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The " Blind Spot " as seen from below.

flight. He now attempts to get over the necessity for allowing deflection for the British machine by diving from behind and firing in the line of flight of the British machine. The Fokker was not a very handy machine, and our pilots soon found that by turning they could avoid the enemy's line of fire while exposing the Fokker to fire from their observer's back gun.

In consequence the Fokker pilots took to making one dive on our machines. If they did not succeed on the first dive they carried right on till out of range and flew home. However, for a time the Fokker was a decided nuisance, as our observers were compelled to keep a constant look-out instead of attending to the job in hand. The next development was the escort machine. Instead of sending out one machine alone, as formerly, we sent two, one to do the artillery shoot or reconnaissance, the other flying slightly above to keep a close watch for Fokkers and to fight them off when attacked, thus allowing its comrade to do his job unmolested.

The Germans' reply was to attack with two or three Fokkers at a time. This brings us to the end of 1915.

Let us just review the situation. On our side a few two-seater fighting machines of the pusher type, also a few tractor scout machines with guns firing either at an angle or through an airscrew with deflectors. These, however, were not numerous enough to act more than one at a time. In consequence our two-seater artillery and reconnaissance machines are compelled to work in formation of two or more, one machine doing the work, the remainder the escort.

The Germans' reply was to attack with two or three Fokkers at a time. This to attack our machines.

The beginning of 1916 sees a great change. Our designers have meantime been working on the problem of fighter machines and have decided for the pusher type. In consequence, we see several new squadrons detailed purely for fighting, and consisting of two-seater machines of a superior type to our former ones, and small fast single-seater pushers. With these machines we find a splendid field of view in front, a gun firing straight along the line of flight as there is no airscrew in front to trouble about, and a superior manœuvrability and performance to the Fokker.

Fighting Tactics.

Owing to the arrangement of separate units doing the fighting and artillery work it was found most satisfactory to arrange for protection for the latter by a system of patrols. A section of the line would be allotted to each fighting squadron for a certain time of day. The squadron concerned would arrange to patrol this sector and keep it clear of enemy aircraft for the time allotted.

This arrangement was found very satisfactory, it served a dual purpose. The patrols by keeping the line clear of enemy fighters ensured that our artillery machines did their work unmolested, they also attacked and drove off or shot down any enemy artillery or reconnaissance machine who tried to work in their turn.

When a bomb raid was some distance over the lines out of range of the protection of these patrols, an escort of fighting machines would be arranged for to protect the slower bombing machines.

From this point to the present time the general tactics have altered hardly at all except in the matter of escorts, so I will outline them once again.

By a series of patrols on definite sectors all down the line our fighting squadrons endeavour to keep the air clear of German machines from five to ten miles over the line. Under cover of these patrols our artillery and short reconnaissance machines work, and it is in constant danger from these patrols that the German does his artillery and reconnaissance flights.

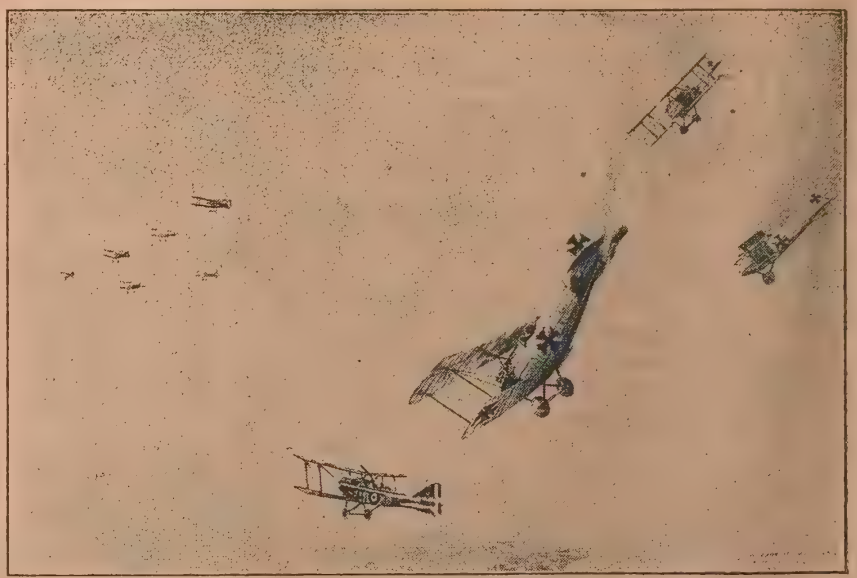
From here I will be able to confine myself to the detailed tactics of patrols, but you will understand that when I talk of fights and tactics of scout machines they nearly all take place on these patrols to keep the line clear.

During the first part of 1916 then we have for the first time aerial forces acting against each other whose sole business is fighting. On the ground the centre and *raison d'etre* of an army is the fighting man—the man who is there solely to kill. Every branch works to help him and to make the killing of greater numbers easier to him. In the air, on the other hand, at present the hub, so to speak, is the reconnaissance and artillery machine, the fighter is merely there to help and protect these latter while they do their job and to hinder the enemy's artillery and reconnaissance machines from doing theirs. In order to do this efficiently, however, the fighter must first drive off or kill the enemy's fighters.

Formation Flying.

We have seen the development of formations owing to the necessity for an escort. We have seen the Germans' reply by attacking with formations of fighters. We now come to our original governing factors making themselves felt and being yet another powerful reason to cause the adaptation of formation fighting, field of fire and field of view. We have seen how the Fokker endeavoured to overcome the deflection difficulty in aiming by attacking from behind and firing along the target machine's line of flight.

We now found that the pusher type of fighter gave these tactics too many chances to make it pleasant for a lone pusher to be caught by two or three Fokkers. Not only was the observer's field of fire behind absolutely cut off by the planes airscrew, etc., but in too many cases the Fokker approached unseen, owing to the large blind spot behind and above the top plane. In the pusher scout the loss of field of fire did not apply, as owing to its very superior manœuvrability it could turn and bring its gun to bear very easily, but the field of view was a serious drawback as the pilot had to do all the looking out for himself having no observer to help him.



The Consequence of Losing Formation.

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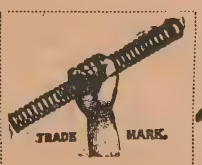
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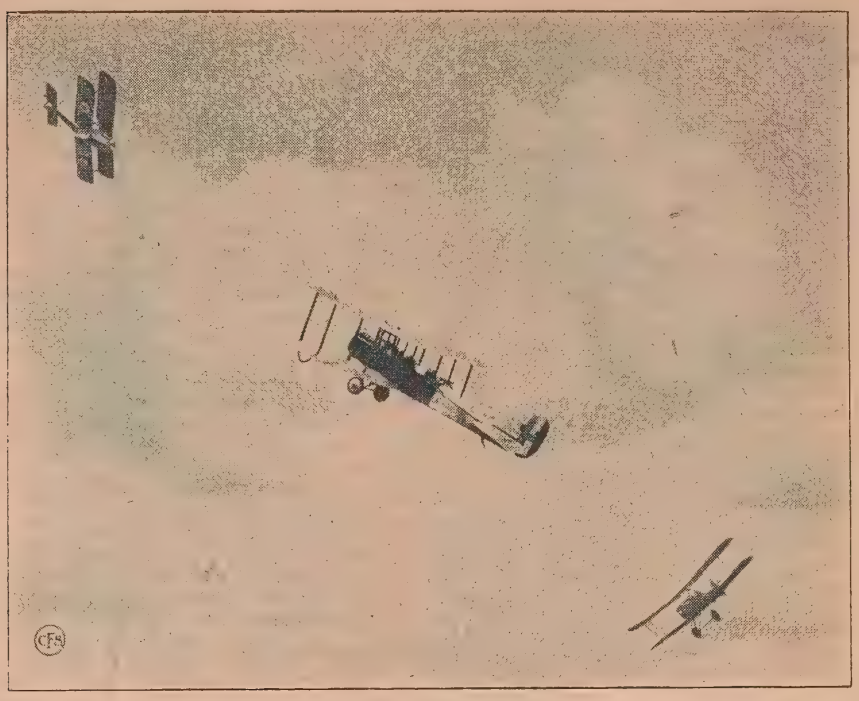
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Fighting Two Opponents at Once.

The consequence was the universal adoption of formation. There is never a point in the sky which some member of a formation cannot see, also if one man gets a Hun on his tail, as the saying is, another in the formation will see and shoot him off.

The next development in fighter machines was French. It was a tractor single-seater with, for those days, a very fine performance (illustration not reproduced).

The methods employed to solve the various problems which we have already met with were highly ingenious. We will take first field of view. As you see, the pilot is seated behind the top plane. The view behind, except under the tail, is unhampered. His head is rather lower than the top plane, but by standing up he can see over it, so that there is only a very small blind spot above and in front. Looking over the side we find a very narrow bottom plane, so small that a very slight kick on the rudder will swing it out of the way and we can see everything below.

Next we have the difficulty of firing forward. This is got over by mounting the gun quite high on the top plane so that it just shoots over the top of the airscrew. It is set at a slight angle upwards from the line of flight, but this is not enough to introduce complications in aiming.

The Attack from Below.

When in this position the trigger is pulled by a Bowden cable running down to the control lever. The gun can also be pulled down so as to fire upwards at a steep angle. This method was used much by Capt. Ball, V.C., and was originally his favourite method of attack. In this case, again, it is a point blank shot as both machines are travelling on parallel lines of flight at approximately the same speed.

At about the same time as this scout the forerunner of the present two-seater made its appearance. The machine was a tractor. Many lessons had been learnt and the result was that the pilot was put in front and the observer behind. Where an enemy could not be shaken off from behind by quick manœuvring a man had to be put to shoot him down. The observer being behind the planes his field of fire forwards was practically nil, so that the pilot was given a gun firing through the airscrew by means of a gear which he used in much the same way as a scout pilot uses his gun.

These machines made up in field of fire what they lost in manœuvrability, and it is still quite a debated point as to whether a two-seater thus armed is more than a match for a scout machine or not.

These machines were quite capable of looking after themselves, so we find the necessity for escorts of fighting machines going with long bomb raids or reconnaissances becoming less and less and scout machines confining themselves to the ordinary work of patrols.

I will now divide the remainder of my time into three parts and deal shortly with the development from this stage of—(1) Design of machines; (2) design of sights; (3) fighting tactics.

I will first show you a more or less typical scout machine. The method of shooting through the airscrew by means of a gear was universally adopted. In order to increase the rate of fire, two guns were put on scouts firing simultaneously.

This was found necessary owing to the extremely fleeting chances of a shot which are possible to be got in a fight. When machines are manœuvring around each other at approximately 100 m.p.h., targets remain in a favourite position only for a matter of seconds, and, therefore, it is necessary to fire as many bullets at him as you can in those seconds. You will see the gun under the centre section just in front of the pilot where he can get at it to remedy temporary stoppages (illustration not reproduced).

The top plane is almost level with his head, and, therefore, his view above and forward is almost entirely unobstructed. The view directly above is more important in a fight than would appear at first sight.

Imagine two machines manœuvring round one another for position, each trying to turn faster than the other in order to get behind the enemy's tail. They are both on an almost vertical bank and on opposite sides of a circle. One or other will tire sooner or later and will try some fresh manœuvre, and it is of vital importance to see the start of any such manœuvre on the enemy's part.

Here we see Richthofen's circus (not reproduced). You will notice that these machines incorporate much the same features. Pilot behind and almost level with the top plane, two guns, etc.

Here is a typical two-seater fighter of to-day. You will see that the same position is adopted for the pilot as in the scouts we have seen already. The observer is placed close up to his pilot so that he may communicate with him by touch in a flight. You will see what a splendid field of fire he has all around, both in front over the top plane and behind, in fact, the only blind spot which he cannot reach behind is under the tail. The pilot looks after the front, he has a gun mounted as we saw in the scout firing straight forward through the airscrew.

Since the beginning of 1917 practically the only difference in design of fighting machines has been in increased speed climb or manœuvrability, the general features being as I have shown you, so that these machines will serve as examples of the machines in which we use the sights and the tactics which I will now describe to you.

Necessary Corrections.

The two problems in sighting were:—(1) To allow for the deflection in aim necessitated by the speed of the firer's own machine; (2) to allow correct deflection for the enemy's machine.

We have seen how in the scout machine the first of these two problems was solved by firing straight along the line of flight. The second problem was also circumvented provided the attacker could get into a favourable position directly behind the enemy's tail and fire straight down his fuselage along the enemy's line of flight. But this position was a difficult one to get, requiring skilful manœuvring, and only allowing a fleeting chance of a shot owing to the very fact that no man would allow an enemy to remain in such a favourable position for longer than he could possibly help. So many brains started to work on the problem. Here, again, we see an enemy machine crossing at right angles at X. (See Fig. 2.) The firer's gun is AB, A being the usual backsight and B the foresight. A bullet, therefore, if fired from this gun will travel along BC.

Now we know the speed of a bullet and we know approximately the speed of an enemy machine. If the enemy is travelling at 100 m.p.h. he will cover 40 ft. while the bullet is travelling 200 yards. Let XC then equal 40 ft. and BC 200 yards. If the trigger is pulled when the enemy is at X he and the bullet will meet at C. We have, therefore, to arrange for some form of sight to help us. If we prolong the sight line XB through the foresight B to K on an arm A, K sticking out at right angles to the gun and put the backsight at K we have a sight which will cater for machines crossing at right angles from left to right.

Let us now take the case of a machine Y approaching at an angle along YC. BC is still 200 yards, so if we want to hit the machine at C we must pull the trigger when the machine is at Y with YC = 40 ft.

Again, prolong the sight line YB through B to I, a sight on an arm AI parallel to YC the line of flight of the machine, put the backsight at I and you have the necessary sight. Now XCB and KAB are similar triangles, but so are YCB and IAB. XC and YC are equal, i.e., 40 ft., therefore AK and AI are

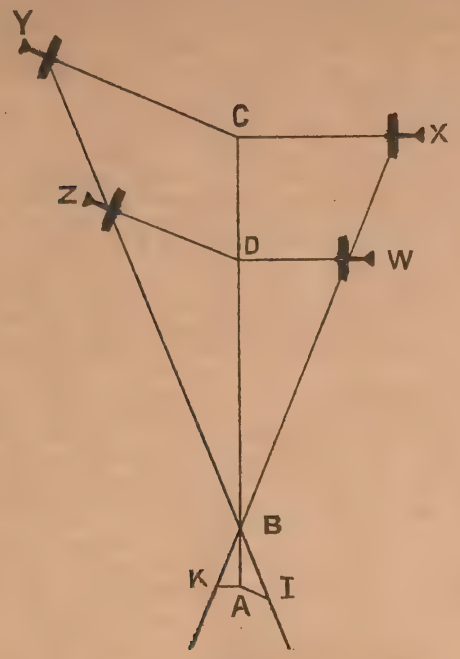


Fig. 2.

equal, therefore we need not make a separate arm AI. If we arrange AK to pivot at A and swing it round parallel to the line of flight of the enemy it will give correct allowance for any angle of approach.

That is correct for 200 yards. It is also correct for any range. Take the cases of W and Z approaching on parallel lines of flight to X and Y but only two-thirds the distance away. If we use this sight we will press the trigger when they cross the lines XB and YB respectively. Now, BD is ⅔ BC, therefore the bullet takes ⅔ the time to get to D tht it did to C. But WDB and XCB are similar triangles, so are ZDB and YCB, so that WD and DZ are ⅔ XC and YC, therefore the machines W and Z take ⅔ the time getting to D that X and Y took getting to C, therefore, again, the bullet hits them at D. In the same way this form of sight is correct for any range used at present in aerial fighting. As long as the length AB from backsight to foresight is known it is quite easy to work out the necessary length of the arm AK.

Primitive Sights.

So the first attempts at making sights which would allow correct deflection for the enemy machine were all in the form of short arms set at a definite distance behind the foresight and pivoting on a universal joint. These arms carried the backsight and had in all cases to be set parallel to the line of flight of the enemy machine by the firer. This meant that he had to devote the use of a hand which was already fully employed to the sight, that he had to judge the exact angle of the line of flight of the enemy machine, a much more difficult matter than would at first appear, and that if he should get into a close fight he would have to judge the angle, adjust the sight, aim and fire all in a matter of seconds. This form of sight was used, however, for some time, but was not found to give good results.



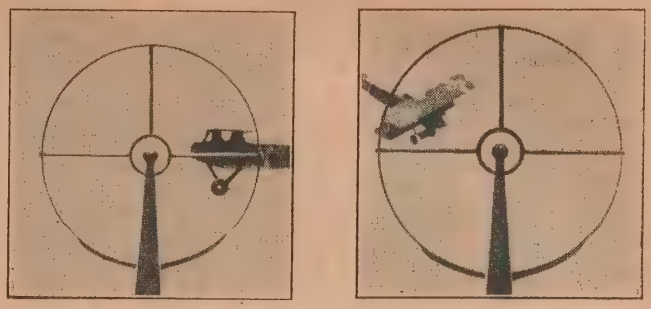
Fig. 3.

The sight which we are still using was then brought in. Here, again, we have an enemy at X flying across a firer's front at right angles. (See Fig. 3.) The gun is AB. Again, we will take that XC is 40 ft., BC = 200 yards.

In order to hit the enemy at C, if the firer's eye is at A, he will sight along the line AX. If we put a right angle bar across the foresight ending at E and D this will give him the correct line for right angle shots.

Now if with centre C and radius equal to CX 40 ft we describe a circle, any machine on the circumference of this circle, when the trigger is pulled, will be hit at C, provided its line of flight passes through C. This also applies on the vertical plane.

This gives us the ring sight. It is a ring of radius BE, which length depends on the length AB, mounted on a convenient place



Aeroplanes Crossing Ring-sight.

the correct distance from the firer's eye. In order to ensure that the firer's eye is on the correct line ABC a bead is placed somewhere between AB on that line.

This gives the firer a definite aiming point for all right angle shots, diving, climbing, or flying level.

For shots at machines coming in at an angle the firer imagines his ring to be a glass ball and places the enemy machine on its circumference pointing into the centre.

With this sight no adjustment is necessary, and with constant practice it becomes fairly easy to place machines in the correct position in the ring to obtain a hit.

This is a very short explanation of the ring sight, and I am afraid not very clear. Here we have some instances. (Illustrated above.)

Thus we have a sight which guides us in allowing the correct deflection for an enemy machine; we abolish the deflection due to the speed of the firer's machine in the case of the pilot by placing his gun so that it fires parallel to the line of flight.

This leaves us with the problem of the observer's sight only. He of necessity must fire at all angles to the line of flight. You will remember how by putting an arm pivoting on a universal joint which was set parallel to the line of flight of the enemy machine we got a theoretically accurate allowance.

This in effect was done for the observer's gun. By mounting an arm of the correct length on a universal joint with the foresight on one end and a wind vane behind this arm was always kept parallel to the line of flight of the firer's machine by the action of the air on the wind vane, thus making the necessary allowance automatically. This covers very sketchily the question of sights. We will now deal with a very few of the points in aerial tactics.

In all forms of attack surprise is a most valuable factor With this end in view the air-fighter uses to help him sun, clouds, the blind spots of the enemy's machine, and many other aids.

A machine in the air is at all times very difficult to see. Watchers on the ground often cannot understand why formations do not see each other.

The lecturer concluded by exhibiting a series of slides illustrating aeroplanes and groups of aeroplanes, and described how their positions and relative arrangements affected their vulnerability and visibility. Unfortunately it is impossible to reproduce all these slides or the photographs of typical aeroplanes to which the lecturer alluded in his text.

Thanks to the Lecturer.

General Brancker, in thanking the lecturer, said that after four and a half years of forced growth, when new development had rushed on new development, made possible by the conditions of war, we had in our hands a huge and bulky machine, the Royal Air Force and a vast Aircraft Industry. We were now faced with the task of converting those assets to the uses of peace with as little check on progress as possible.

One fact was quite clear: we must preserve our Aircraft Industry at all costs. It was going to be our greatest and cheapest insurance against war in the future. It looked as if a League of Nations would be formed, and, at any rate, it seemed doubtful whether any Government could go on spending the large sums of money necessary to maintain a large aerial fleet, and it seemed that we had got to make commercial aviation a success to keep us really efficient in the air.

We had unrivalled designers, pilots and manufacturers. There might be some lean years ahead through shortage of money.

From the purely Air Force point of view our duty would be to preserve its activities in peace time. The chief difficulty, the practice of aerial fighting.

Well organised aerial races and acrobatic displays might help to preserve flying skill. The maintenance of the fighting spirit and of fighting machines must remain with the R.A.F. It will be up to designers and manufacturers to support in the future, as in the past, Lord Weir in his able direction of the Air Council.

General Brancker concluded by quoting the Royal Flying Corps' "Training Manual," issued before the outbreak of war, to prove that the authorities had appreciated the possibilities of aerial fighting and had appraised very accurately its probable course of development.

BACK TO GALLIPOLI.

Mr. G. Ward Price, writing from Mudros on Nov. 5th, says:—A first landing has been made on the Gallipoli Peninsula by half-a-dozen British airmen, who flew over there, and came down at Galata, near Gallipoli, where was the chief German aerodrome, with whose machines our own from Lemnos and Imbros were constantly fighting. The Turkish troops on the Peninsula did not seem to have been officially informed of the armistice, and the attitude of their officers was consequently a little constrained.

The British machines crossed the Peninsula from about Y beach at Helles to Galata, flying only about 400 ft. above the ground, so that possible hostile consequences of the Turkish failure as yet to circulate news of the closure of operations were averted by the white streamers which the aeroplanes flew. They stayed an hour at the enemy aerodrome, and found there some of their own machines which had been shot down some months ago.

THE HEALTH OF AVIATORS.

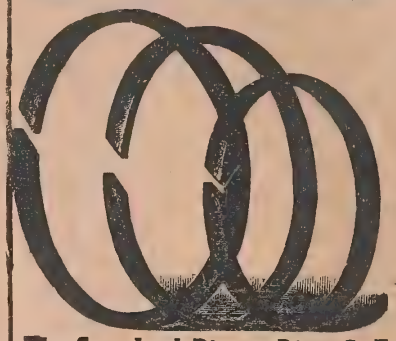
Major Martin W. Flack, of the Research Department of the Air Ministry, in a recent lecture on "The Health Aspects of Aeronautics," delivered at the Institute of Public Health, said that it was a constant strain to the human organism, and a very severe strain, to be able to go up in an atmosphere where oxygen is getting rare and to adapt the bodily needs to that condition.

Unless measures were taken for protection, or the aviator was a superman, collapse would inevitably occur. It was the function of the air medical officer to look upon the pilots under his charge as human machines, to say whether they were fit to take the air, and to take steps to remove any signs of mental or physical distress. To this end he advocated a system of tests of the respiratory and other organs, which would enable a medical officer to tell whether a pilot was deteriorating or not. It was obvious that a pilot must have good vision, good hearing, and good hands, but lung capacity was the most important consideration.

The successful pilot was generally a deep breather, who took in more oxygen per unit breath than the ordinary man, and was able to hold his breath longer. At the same time, what was known as "the flying temperament" would to a certain extent overcome physical disability, and one of their most famous aviators was a man of diminutive stature. In ground training hardening exercises should be insisted upon, as there was no doubt that a man so hardened, sitting in light clothing, had a much smaller oxygen usage than one who had not undergone the treatment. Careful watching was necessary in regard to drinking and smoking, and mental distraction, such as gardening, was of the greatest importance.

Sir W. Watson Cheyne, who presided, laid stress upon the need of a flying medical officer being a specially trained man.

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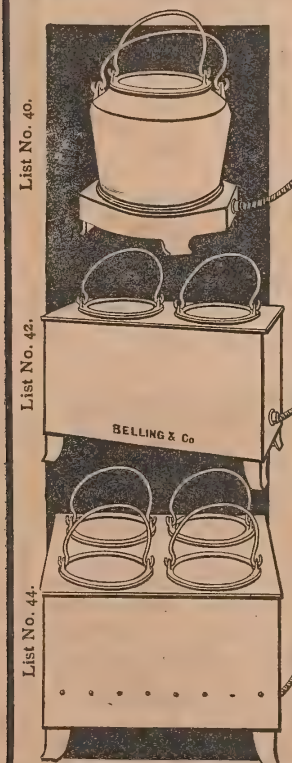
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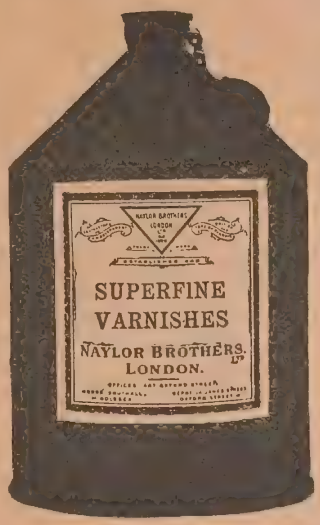
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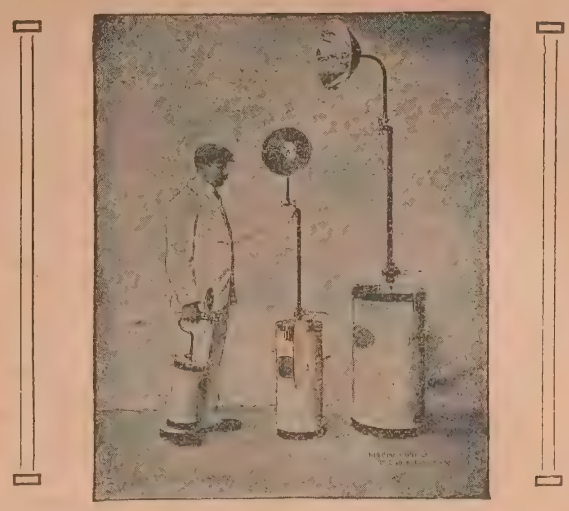


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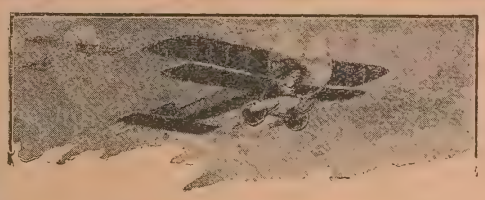
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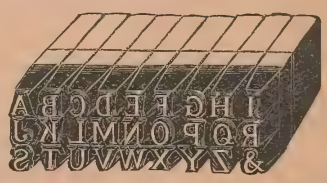
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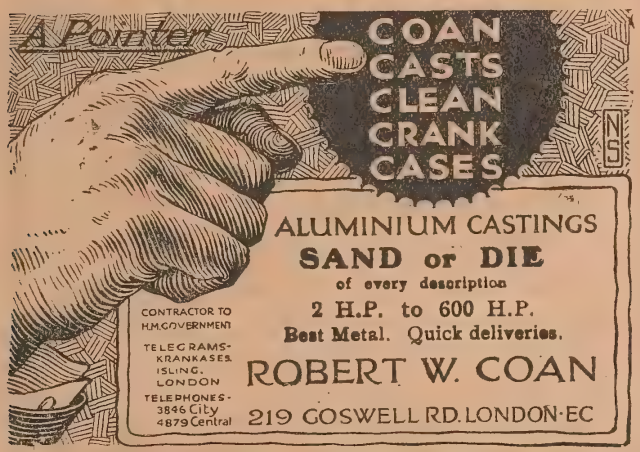
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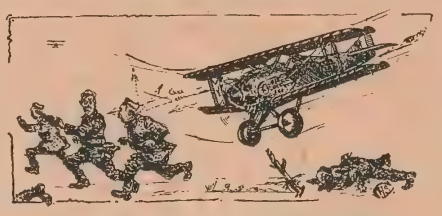
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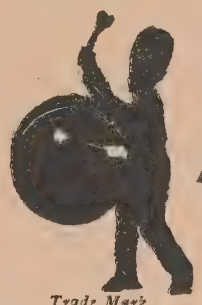


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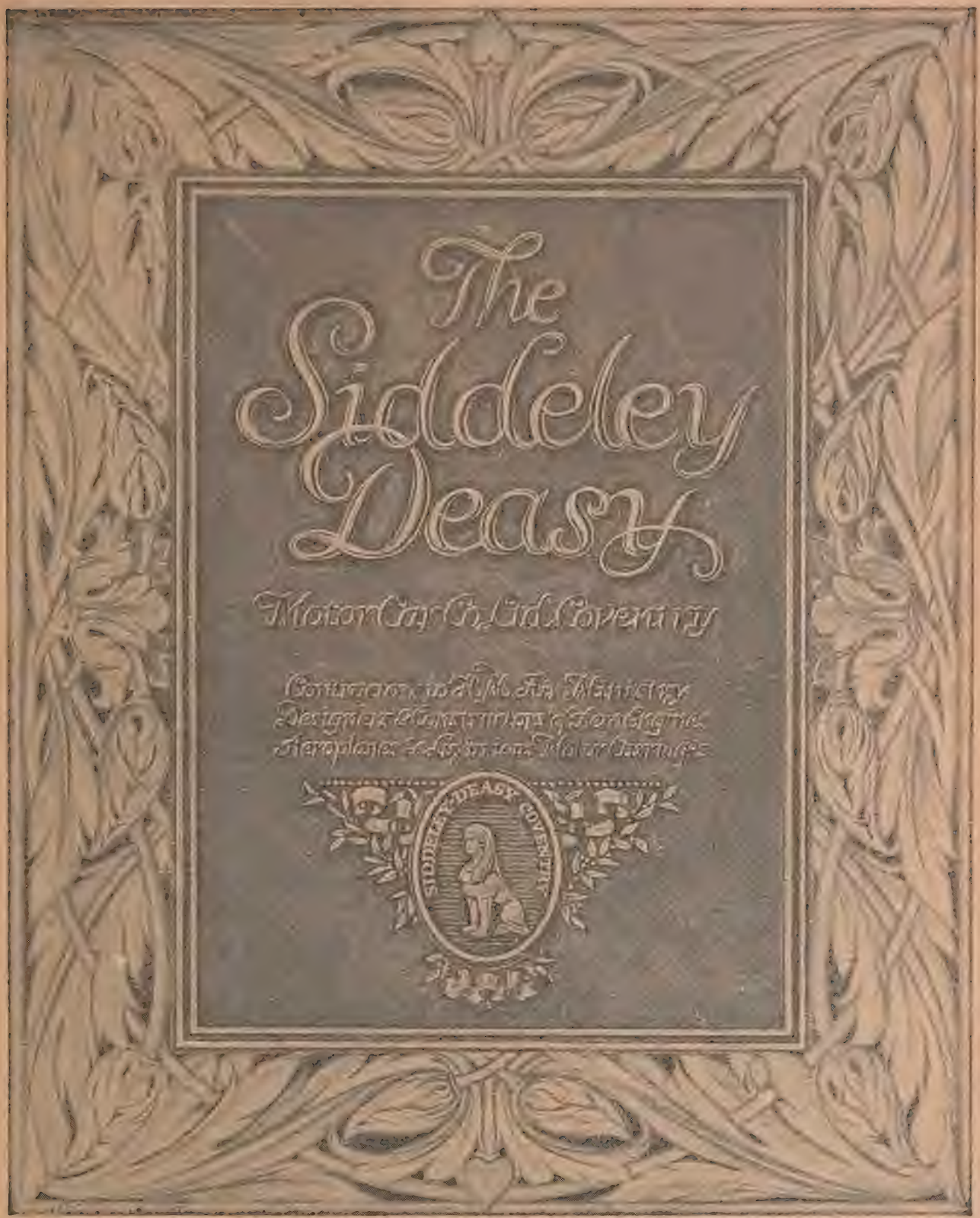
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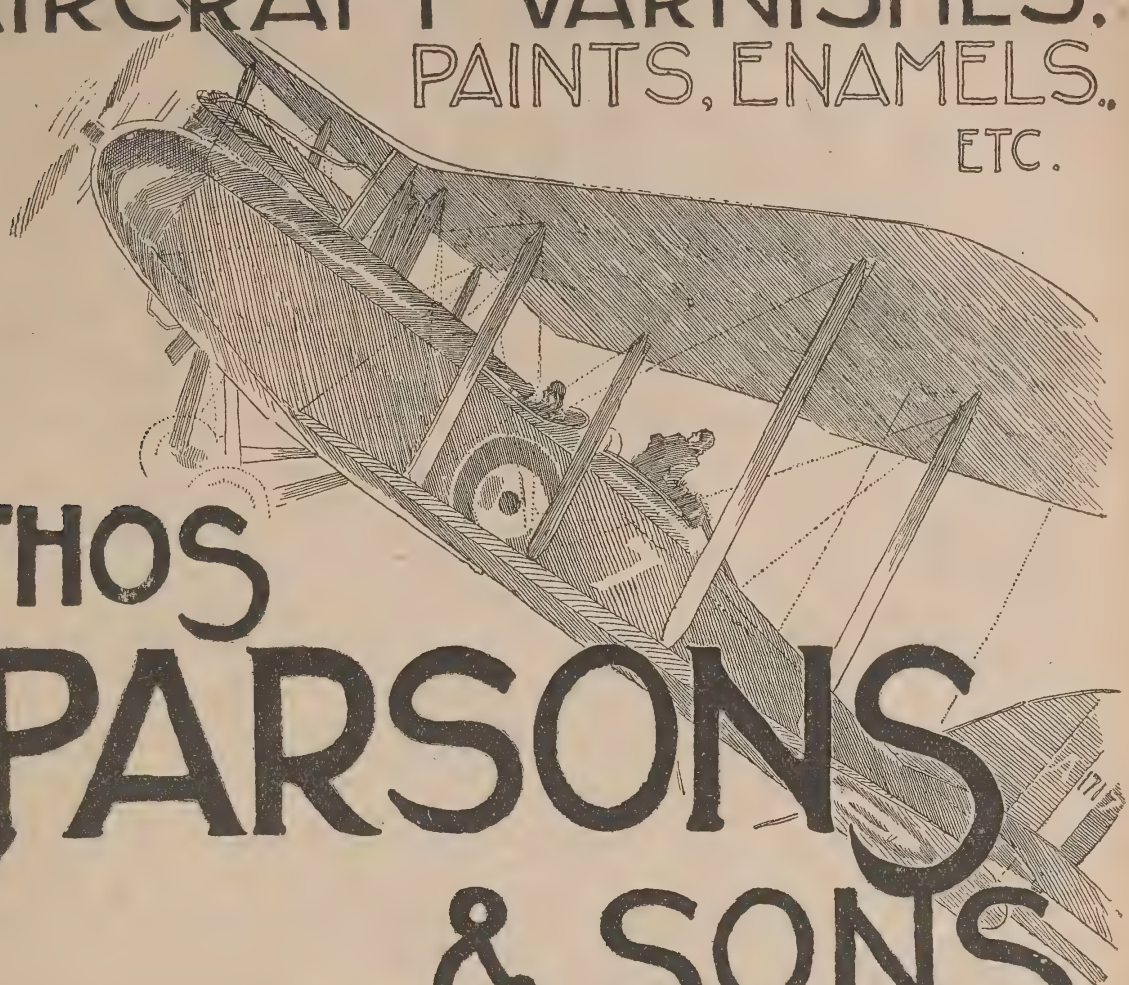
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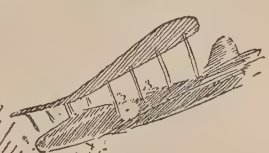
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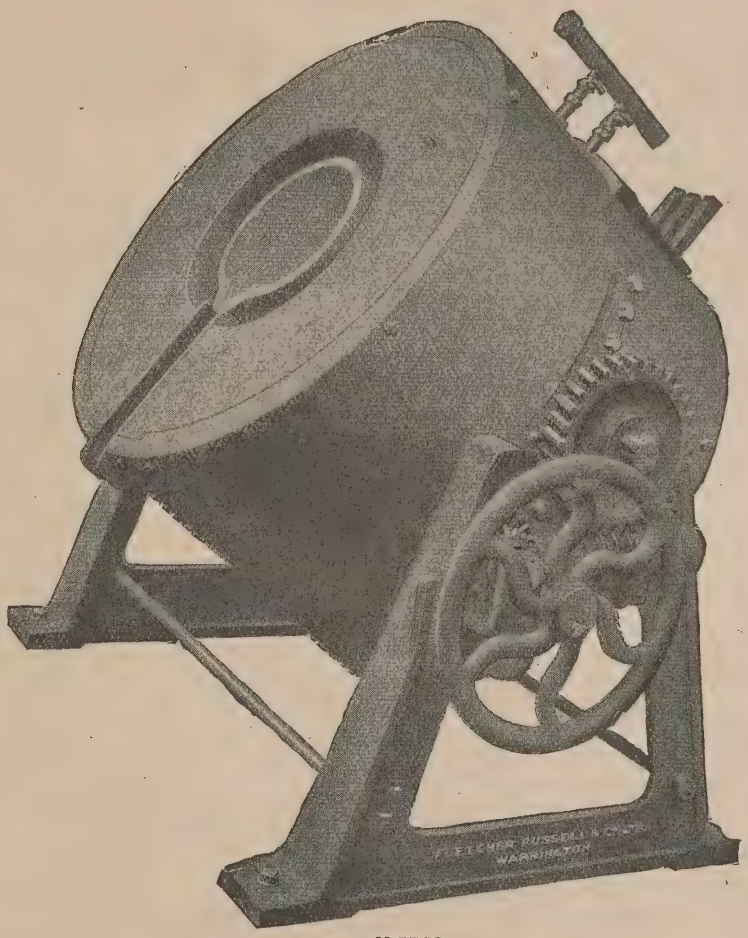
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THE BRITISH NAVY AND AVIATION.

And at the finish, when the rats had been dug out of their holes by the British Army in accordance with Mr. Churchill's promise—curious how Mr. Churchill's promises come off in spite of other people making a mess of his plans—and when the only real menace to Britain's Sea Power came quietly forth to hand itself over under guard as a guarantee of its future good behaviour, who was it that stood on the bridge of the flagship of the greatest fleet the world has ever seen, the supreme commander of the Allies' Navy, and took the surrender of Germany's big ships?

Was it one of our fine old English sea-dogs, a descendant of the Howards, and Hawkinses, and Drakes, and Frobishers of the past? No! It was a little, low-sized Irishman, who constantly wears a cap that is too big for him—presumably ocular evidence that he does not suffer from swelled head—and wears it at the sporting angle of the horsey Irishman. Also, in open defiance of regulations, and to the eternal dismay of naval outfitters, he wears, in his most popular photograph, a neat three-buttoned E.R.A.'s jacket instead of the clumsy regulation four-buttoned affair laid down for officers' wear. For David Beatty does what seems good to him and stands the consequences. The unregular cap and jacket are an allegory of his career, and explain why he and not one of our fine old crusted (and barnacled) English admirals took the German surrender.

One cannot remember that the Beattys were ever a seafaring people. The County Wexford—blessings be upon it—is full of Beattys. If one does not confuse the sub-sections of the clan, David Beatty's father was a fine specimen of the sporting squire, a Captain David Beatty who rode like a Centaur—one can see his seat on a horse in one's memory even yet—and who reared and trained race-horses somewhere on the line of road between Borrmount and Castle Boro—one forgets the names of one's youth, but one remembers the places. Later David Beatty, senior, came to England to show the English how to train horses—somewhere Rugby way. After which the County Wexford heard little of that family. One wonders whether the County knows even now the eminence of its offspring.

The Effete English.

However, there you have the unpleasant facts to face. The war was finished at sea by an Irishman, Sir David Beatty. It was finished on land—according to the Allies' Generalissimo, Marshal Foch—by the hammer-blows of a Scot, Sir Douglas Haig. And it has to be finished politically—the dirtiest job of the lot—appropriately enough, by a Welshman, one Lloyd George. And one hopes that the English feel proud of themselves.

None will ever forget the truly soldierly way in which the pick of the nation—some million or two out of forty-odd millions—volunteered, were accepted, and were thrown away half-trained in holding up the great German attacks of 1915. Nor, one hopes, will anyone forget the millions and tens of millions more of able-bodied and fit young men who dashed into munition works to dodge the Army, and there slacked and struck and plotted revolution, while the old married men were dragged out to protect them—the swine.

Yes! The politicians of all parties will forget both sides of the picture, for the vote of the 1914-15 volunteers is now too small to be worth any trouble, whereas the Bolshevik trench-dodgers in the factories have votes in millions. So the politicians will remember them and flatter them for their self-sacrifice (save the mark) during the war.

The Off-Chance.

These be your Gods, O Britain, henceforth. These be the British People for whom our sailors and soldiers and aviators fought and died. At least one must believe them to be so unless, when the Army comes home, the curs of trench-dodgers go back into their kennels again. There is just a dim hope that, when the soldier comes back and finds that Bolshevik shop-stewards have queered his pitch for him, he may do a little rough Jeddart Justice on his own.

Having shed the blood of many a brave German soldier, any one of whom was worth a dozen of these traitorous worms, the British soldier is not likely to be too squeamish as to how he deals with the British Bolshevik. And so there is just a sporting chance that when things have settled down we may have a British People founded on the British Army, and not a chaotic country run by self-seeking shop-stewards. These things be on the knees of the Gods, but under the Gods it seems that the leading of the Nation into the right way depends on the Celtic peoples within the British Empire.

It seems fairly clear—as shown—that the English cannot produce any leaders themselves, for even their Bolshevik leaders are Celts. MacManus, Gallacher, and Murphy are obviously Irish, and Watson is equally obviously Scotch, though not perhaps a true Scot. Crawfurd, Ramsey, and Kirkwood are Scottish enough for anybody. Therefore it ought to be easy enough to turn the mere sheeplike English mob in the right path. The politicians are more likely to lead them in the wrong path. It remains to be seen whether the Service people when they come home can lead them aright.

The Silent Service.

All of which seemingly has little enough to do with the Navy and Aviation. As a matter of fact it has all to do with it, for until one grasps the vital fact that the Englishman is practically incapable of thinking for himself one fails to understand why Naval aviation was in the lamentable state in which it was at the finish of the war, when the Admiralty very kindly removed the censorship so far as the Navy was concerned, and bade the Press carry on as before the war.

Rather a cute move that for the Silent Service, which somehow gets far more advertisement out of its silence than the Army ever did out of its world-wide work. The Admiralty Advertising Department rather seems to make silence its talking point, like one's valued friends of Rolls-Royce, Ltd., and with almost as much success. Anyhow, the censorship being removed, everybody is writing about and photographing and painting and sketching the Navy afloat and ashore in all sorts of possible and impossible positions, and so the Admiralty is getting away quite nicely with the general impression that it really won the war.

Therefore one takes leave to state that the Navy—*qua* R.N.—did not win the war, and the Admiralty—*qua* Admiralty—very nearly lost it. The people who really won the war, and who—perhaps unfortunately—saved us from ever being hungry were the comic irregulars; the trawler patrols; the odd ships manned by R.N.R. and R.N.V.R. people; the marvellous—and disgracefully underpaid—officers and men of the regular mercantile marine lines; the sink-or-swim tramp crews, who were torpedoed again and again and always came out smiling. None of them ever got munition-makers' wages.

And of the regular Navy the people who did the work were the piratical sections—the destroyers who drove cheerfully over minefields, the submarines who shot and ate German ducks in the Heligoland Bight or half-way up the Ems, the P. Boats, the people who commanded "Barralongs," and such.

The Big Ships.

It is true that the opportunities for the big ships were few, but when they did occur they were frequently missed. The Falkland Islands show was the result of a fine piece of quick action—by Mr. Churchill, one believes—and of excellent navigation, but when once the squadrons met, von Spee was hopelessly overweighted, so he and his men died like gentlemen rather than surrender, as they might have done.

The first "Goeben"-"Breslau" affair was a mess, The failure to break through the Dardanelles—a perfectly feasible show, as is now known—was worse still. The second "Goeben" business was even worse.

Jutland was a victory for superior numbers, but till the superior numbers arrived—not according to schedule—and the Germans wisely went home, Sir David Beatty's portion of the Fleet was by no means having things all its own way. The true story of Jutland has still to be written, and when it is one will probably find that there was far more sense in that first Admiralty communiqué—published on the Saturday morning—than most people imagine to-day.

The chase of the gallant "Wolff" and its daring little seaplane, the "Wolffchen," if the story should ever be written, will read like a farce, or one of the stories of Mr. Emanuel Pyecroft, A.B., or of Mr. Pritchard, the Marine.

The fact remains that our big ships by remaining in port compelled the German big ships to remain in port. Our Fleet being—what is it?—two or three times as big as theirs, immobilised two or three times as many men of our men out of a smaller population, and to that extent the German Navy scored over us.

The German Submarines.

Most important of all, their few dozen submarines, handled ruthlessly as being weapons of war and not of sport, but with admirable skill, obliged us to raise and maintain a force of submarine hunters of all sorts, with all their paraphernalia and personnel of supply ashore, which would have formed something like an Army Corps if it had been available for other than Naval purposes.

When some unprejudiced person, removed from the glamour of the Silent Service, possessing a knowledge of facts and a correct perspective—if he ever arises—comes to write a review of our anti-submarine campaign, we shall show up, not as the high-browed heroes we imagine ourselves to be, but as a collection of abject asses who allowed ourselves to be deprived of most of our luxuries and to be scared to death at the prospects of famine, just because we lacked the brains to tackle the Hun submarines in the only sensible way—with aircraft.

Submarine Hunting as Done.

And even when we did try to use aircraft, could anyone imagine more utterly idiotic ways of doing it? One wishes one could find time to write a whole funny book on our submarine hunting by air. It has been boomed in the Press as one of our greatest successes. As a matter of fact it has been one of our most expensive failures—in proportion to the results obtained.

Has anybody inquired about the cost of a certain air station in a certain far northern island firth, where sums like unto those spent at Loch Doon have been wasted on concrete quays and buildings and docks, and where, owing to constant darkness in winter and constant rain in summer, there are about 20 flying days in the year? Has anyone called for the number of hours' flying done there, and the cost of the machines, wages, and stores expended there?

Has anyone asked about a certain lyn in the far south-west where elaborate buildings have been put up, although the road to those buildings is rapidly falling into the sea? And has anyone asked why the choicest spot on the Channel, a certain sheltered portion of the great Falmouth Harbour, has been turned down by inspecting officers who have never even flown a seaplane?

Those are mere preliminary hints concerning the imbecility with which matters of such importance as the building of permanent stations have been handled, for such were, until the R.A.F. blossomed forth on that last memorable 1st of April, the Navy's jobs.

Naval Intelligence.

Lord Weir told us recently that not a single vessel under aerial escort had ever been attacked by a submarine. That remark was, obviously, just as true when the Navy let the R.N.A.S. be swallowed by the R.A.F., so the Navy must have known it, or at any rate the Admiralty must have known. Yet the Navy—whom our little children have been told to couple with God when returning thanks for their breakfast—let the enemy go on sinking ship after ship rather than sink their own silly English pride and prejudice, and admit that the R.N.A.S. could succeed where the much-advertised Silent Service had failed so abjectly.

The great British Navy was too stupid, or too conceited, to acknowledge that merely tying a kite-balloon onto the tail of each of two or three tramps in a convoy was a better protection for the whole convoy than a flotilla of destroyers. The Navy refused to admit that it had been defeated by a sausage, and so it let the enemy go on sinking our food-ships and our passenger-and mail-boats. There is the prize example of the high level of intelligence of the senior English Naval Officer.

The Root Cause.

That is the root cause of all the tragedy. It is almost impossible to find any real live intelligence inside a Naval uniform which bears more than three stripes on its sleeve. A brass-hat seems to be the beginning of ossification of the brain in the Navy.

And under it all lies the basic fact that the Navy is essentially the Englishman's service. The Scot and the Irishman are in much smaller relative proportions in

the Navy than in the Army, and when they do join the Navy they generally specialise as engineers, torpedo people, submarine folk, doctors, or something of that kind which needs brains. And the old Norman families almost always go into the Army.

The whole Naval system is carefully designed to kill intelligence. A youngster is caught at 13 or so, before he has had any education at school, and is pushed into Osborne—or the "Britannia" in the older days—where education is the last thing about which anyone seems to bother. He is crammed full of stuff about the old stick-and-string Navy that was, and about the new mechanical gadgets that are.

Then he is turned out into the Navy, where his whole outlook on life is limited by a ship's scuttle. He sees more of the world than any other of the King's Servants and learns less of it—because he has never been educated. He talks shop in his mess, and the rest of his conversation is pay and women.

One gathers that the system is changing, and that there is some talk of admitting educated people from the Public Schools and Universities to commissioned rank in the Navy. One hopes that it may be true, for in such case there is a chance that when the next war comes we may have enough well-educated senior officers in the Navy to prevent it from conducting that war in the same wasteful, inefficient, and stupid way in which it has conducted much of this war.

Our Original R.N.A.S.

However, to return to the particular *casus belli*, the Navy's handling of aviation. Thanks to the good pre-war work of Captain Murray F. Sueter, backed by Mr. Churchill, we started this war with what was undoubtedly the finest Naval Air Service in the world. We had seaplanes and flying-boats which really flew. We had experimented successfully with dropping torpedoes from aeroplanes—Captain Sueter had taken out several patents on the subject. We had experimented with a 1½-pounder quick-firer, working from a 200-h.p. seaplane—then the highest-powered single-engined aeroplane in the world. The R.N.A.S. had the fastest small scouts in the world, and the biggest long-patrol machines.

Captain Sueter, later promoted to Commodore and made a C.B., was, and is—though not on the beach—a man of remarkably quick understanding, and grasped the advantages of a big new idea quicker than any but a few great men. He is not an engineer, and he was badly let down by his engineering staff on many occasions, but he was always right in what he wanted, even if his *pseudo*-engineers prevented him from getting it.

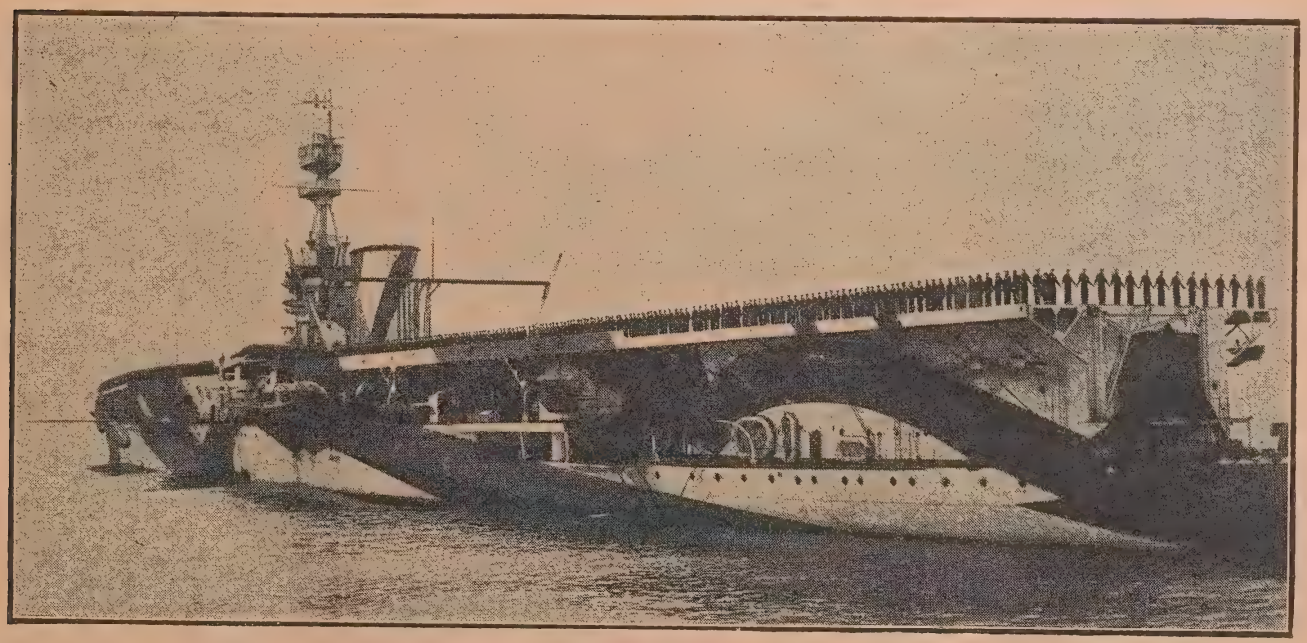
There was, for example, the case of "No. 1,000," a colossal seaplane, which was begun just before the war and finished about two years later. It had three engines, like a Caproni, two tractors and a pusher, and a nacelle like the stern-gallery of H.M.S. "Victory." Nine of the brutes were ordered, though the people told off to build them pointed out that they could never fly. They were to have bullet-proof steel floats, and armoured tanks and all sorts of luxuries. Finally, by scrapping all these special features, the first one just managed to stagger off the water with a strong tide against a strong wind. All the work and material on the whole nine were wasted, just when we wanted aeroplanes most. Which is what comes of trusting to theorists who have never made good as practical men.

Still, it was under Commodore Sueter's régime that the R.N.A.S. became a kind of permanent stand-by for the R.F.C., so that whenever the R.F.C.'s technical experts had landed them into a hole through ordering impossible machines or engines, or none at all, the R.N.A.S. made up the deficiency. Thus the R.F.C. got the 1½-strutter Sopwith, and the Pup, and, one believes, the Camel, and the le Rhône engine, and the Rolls-Royce engine, and the Handley-Page biplane, all of which were ordered in quantities by the R.N.A.S., after having been looked upon with scorn by the R.F.C.

The R.N.A.S. did the Army's work in Mesopotamia, and lent machines to the R.F.C. as well. The R.N.A.S. did likewise in Palestine, in the Balkans and in Belgium. And it was under Commodore Sueter that it did all its best work. But even he could make no impression on the Navy.

The Good Days at the Admiralty.

While Mr. Churchill was at the Admiralty things went well and Commodore Sueter got what he wanted, but as soon as Mr. Churchill left the rest rounded on the Air Department and its chief as "Churchill's Pets," and had no use for the R.N.A.S. And when Commodore Sueter himself left the Admiralty, to be succeeded by prize barnacles, the R.N.A.S. simply went to pieces, so far as equipment was concerned.



H.M.S. "FURIOUS."—A seaplane-carrier with launching deck.

It is true that the R.N.A.S. grew enormously in size, and to some extent improved in discipline at the home stations—at any rate to the extent of ceasing to be a public scandal. But it developed nothing of value from a flying point of view.

The great Porte Boats, and their numerous progeny, were the development of Commodore Sueter's time, and they were the only things which the R.N.A.S. produced which were of any use. The technical people, although they possessed the finest seaplanes in the world, refused to order them, and so a time arrived when the German Navy had the upper hand in the air over the North Sea as definitely as the R.F.C. had over the land. The beautifully designed little Brandenburger seaplanes simply dominated our big multiple-engined flying-boats, and the "long patrol" which had previously been a routine affair became a very perilous venture, in which the R.N.A.S. losses became very heavy. Whereupon the Silent Service advertised these affairs as examples of the gallantry of the Navy that Flies.

The Ship-Plane Craze.

Then the technical people went off at half-cock over aeroplane-ships, and ship-planes, and flotation gears and all their concomitants. All of which were good enough in their way and might easily have reached a further stage than they have reached to-day in a year after the beginning of the war if the problems had been competently tackled.

The net result was that there was nothing to protect our big slow flying-boats and our airships over the North Sea against the Brandenburgers. And yet anybody except the typical technical fool could have told the authorities that it is possible to make a float-seaplane as fast as a wheeled aeroplane, and that a good float-seaplane is much faster than an aeroplane which has been messed up with flotation gear and air-bottles and such things.

True, a float machine cannot slide along a deck. The average naval man therefore supposes that he must heave-to and lower her overside. It never occurs to him that she can run along on a false chassis and drop it as she leaves the deck. And how many people know of the Gregory and Riley patent of 1912 or 1913, which shows a still neater way of doing it? Really these Naval people make one too tired for words.

What Have the Carriers Done?

And what has the Navy done with its "Furiouses" and "Arguses" and all the rest? It has rigged up some fairly useless but otherwise decent-looking ships with comic platforms, till they look like as if the Navy to-day had got just about as far as the old "scenic railway" on H.M.S. "Hibernia" in 1912, or as Eugen Ely had got on the U.S. Cruiser "Pennsylvania" in 1911. Which, in fact, barring the skill of the pilots and the controllability of the machines, is just about as far as they have got.

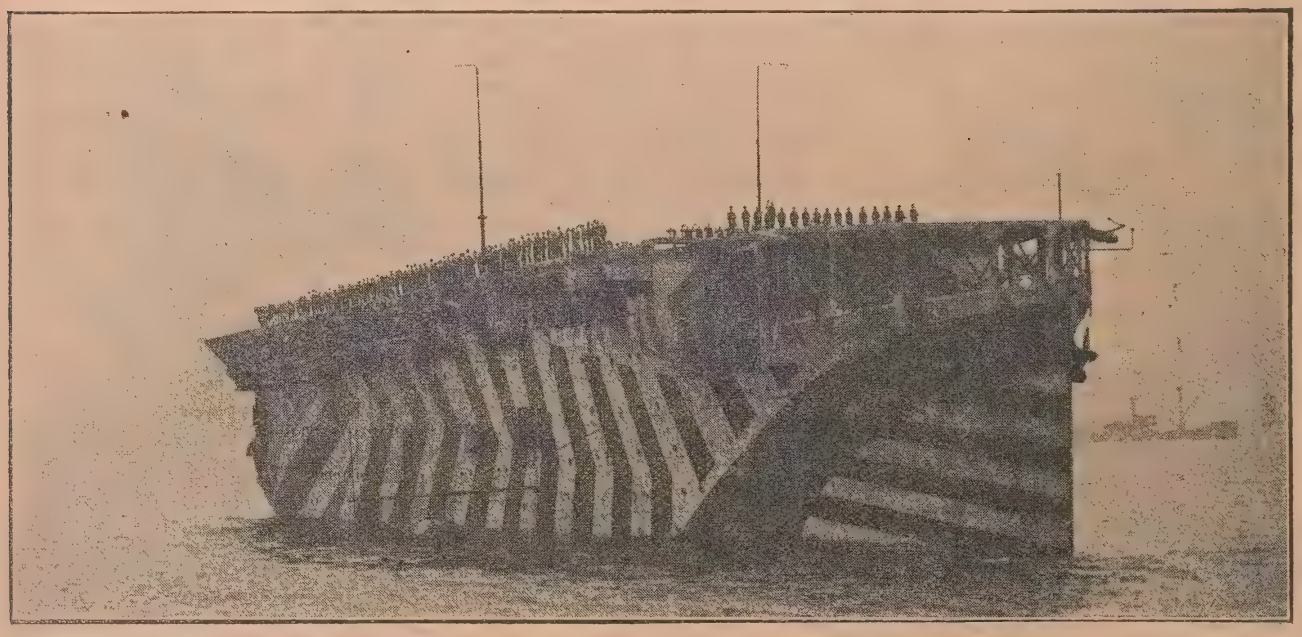
A more pitiable display of blatant incompetence on the part of what is supposed to be this Empire's first line of defence one could not imagine, if one did not also know something about the Coast Patrol business. And for all their much-advertised aeroplane ships, what has the Navy achieved? One solitary raid on the Zeppelin sheds at Tondern—with about as much net result as Flight-Lieut. Reginald Marix achieved on an 80 h.p. Gnôme-Sopwith Tabloid at Düsseldorf in October, 1914. So much for your wonderful Naval developments.

Why, the old R.N.A.S., with its comic little flotilla of cross-Channel packets, "Empress," "Riviera," and "Engadine," under Lieut. Malone, R.N., did quite as much to scare the Germans by their raid on Cuxhaven and Wilhelmshavn on Christmas Day, 1914, as the whole of our Naval aviation service has done since.

Torpedo Seaplanes.

Then think of that "Goeben" affair, when the ship was ashore for two days and three nights, and the Navy had never a torpedo-seaplane with which to settle her, three years or so after Flight-Commander Edmunds, R.N., had torpedoed and sunk a Turkish transport within 20 miles or so of that very spot. And think of the state of mind of a Navy which, finding its bombs futile, let a brave lad stagger off in the dark with the war-head of a torpedo slung to an improvised dropping gear in his under-carriage in the hopes that he might succeed, where all else had failed—owing to pure Naval obtuseness.

One gathers that when the lad arrived the "Goeben" had gone. But none the less he deserved something pretty big for carting about a war-head which was without safety gear of any kind and was liable to explode at any sharp shock.



H.M.S. "ARGUS."—Another type of seaplane-carrier.

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What Might Have Been.

Of course, in any intelligent Navy which held the Command of the Sea, even to the limited extent which we did, torpedo-seaplanes and seaplane-carrying ships would have been so developed by the end of 1915 that not an enemy ship could have remained afloat within 200 miles of any point reachable by the seaplane-carriers. But, you see, we are not discussing a sensible Navy, we are discussing the British Navy.

So, when the R.N.A.S. wanted seaplane carriers, it had to be content with passenger-boats like those mentioned, and the "Ben-my-Chree," or comics like the "Ark Royal" or the old "Campania." The Navy would give them nothing, and when at last it did give them something, *vide* recent popular illustrations, they were more comic still. And as for torpedo-seaplanes, the Navy refused even to consider them seriously.

Patrols and Convoys.

And finally as to those Coast Patrols and Convoys, about which we have heard so much from our Silent Navy. Certainly fine work has been done, but it is the men on the spot and not the people at headquarters who deserved to be thanked.

The exception is the airships, which under the guiding hand of General Maitland—a soldier, please note—have developed more in the past four years than would have seemed possible in ten or even twenty. To-day we have not only the biggest but the best airship fleet in the world. In design, construction, and performance our airships of all sizes are ahead of their corresponding types in other countries.

Their constant patrol work in all sorts of weathers has been wonderful, and from the early Cunningham and Woodcock days, when people on the Isle of Sheppey set their watches by the Flushing Airship Patrol, while the B.E.F. was going to France, till the Armistice, when the modern patrols used to wake every wild cove (geological, not human, though probably true of both) round our coasts by prying round at unholy dawn hours, the Naval Airship Section has been wonderful.

Some day one hopes to have the honour of writing a real account of the work of the Airships, but meantime it is worthy of note that they have been chiefly organised and run from the start by soldiers and not by sailors.

Clearing Home Waters.

As regards the seaplane coast patrols, they also have done excellently, though hampered at every turn by Naval interference and regulations, and by the ineptitude of their own technical people. The only times when the Navy did not interfere with them, apparently, were those when the R.N.A.S. desired the co-operation of the Navy and co-operation was refused. Despite all these troubles, and heavy losses at sea through bad equipment, the Coast Patrols reduced losses to shipping in Home Waters to a negligible quantity, and for a year or more the big losses have been in the Mediterranean.

The R.N.A.S. work was done on all sorts of weird and wonderful seaplanes and flying-boats, but the last blow fell when the anti-seaplane experts decided to use land-machines fitted with air-bags, for convoy and patrol work miles out at sea. Imagine those young R.N.A.S. pilots miles out at sea on de Havilland school-machines—the old familiar 70-h.p. Renault "Clutching Hand" things—or B.E.2cs, and "d"s, and "e"s.

Any old thing that was no good for anything else in the war was put onto this job. A descent meant the certain loss of the machine, but as often as not the crew were saved, and that seemed to justify the people at headquarters.

Who Will Pay?

A more perfectly imbecile notion never happened, and yet all sorts of high authorities, aeronautical as well as Naval, stood for it. Chiefly because, one imagines, they were never allowed to know that the real cause for this fatuous makeshift was that the technical experts had let down the supply of seaplanes.

One hopes that some day some independent Member in the new House of Commons will arise and demand to know the number of lives lost in the R.N.A.S. and R.A.F. in land aeroplanes used for sea patrols and convoys. And then perhaps somebody who was responsible will be either promoted into retirement, or will be given an extra stripe and sent to some comfortable foreign station till the row blows over.

The Chance for Naval Aviation.

However, one could go on for ever descanting on the imbecilities of the Navy in its dealings with flying. But at last we have a Naval chief in David Beatty who is a man of real intelligence and can appreciate the possibilities of aircraft. It is the great opportunity for the Royal Air Force if it wishes to attain its proper position in relation to Naval Warfare of the future. Otherwise the Navy must start its own Air Service again.

Given a few really practical people to submit ideas for Naval Aviation to the C.-in-C. Grand Fleet, there is no doubt about those ideas being accepted. One has only to recall how quick he was to appreciate the possibilities of the kite-balloons to be convinced that he has not the barnacled Naval mind. But there must be practical sea-fliers at headquarters to work out the ideas, and not the addle-pated theorists who have made British Naval aviation a joke, when it ought to be the admiration of the world.—C. G. G.

THE KING'S VISIT TO FRANCE.

On Nov. 27th, the King accompanied by H.R.H. the Prince of Wales and H.R.H Captain Prince Albert, R.A.F., left London for France. They boarded H.M.T.B. "Broke" at Dover, and at 11.30 a.m. "Broke" left harbour, escorted by other destroyers, airships and seaplanes. During the time of the King's stay in Dover various aircraft flew in the vicinity of the marine station. Major Louis Greig, R.A.F., was in attendance upon the Prince Albert.

AN INSPECTION BY THE KING OF ITALY.

On Nov. 27th, H.M. the King of Italy reviewed a portion of the British troops of the Italian Expeditionary Force.

The troops were drawn up in review order on an aerodrome in a wide plain surrounded by hills, where a few weeks ago a section of Italian Flying Corps was quartered.

Among the troops was a detachment of 14th Wing, R.A.F.

ETON HONOURS.

Among the list of Eton honours issued by Mr. E. L. Vaughan on Nov. 30th are two D.F.Cs. and five A.F.Cs. There are a number of purely Naval and Military decorations included in the list, some of which, doubtless, have been awarded to members of the late R.N.A.S. and R.F.C.

THE GERMAN AIR SERVICE.

The "Daily Express" correspondent writes from Paris on Dec. 2nd:—

The Paris newspaper "Excelsior," in an article on German aviation, states that on July 1st of the present year Germany's Air Force included:—

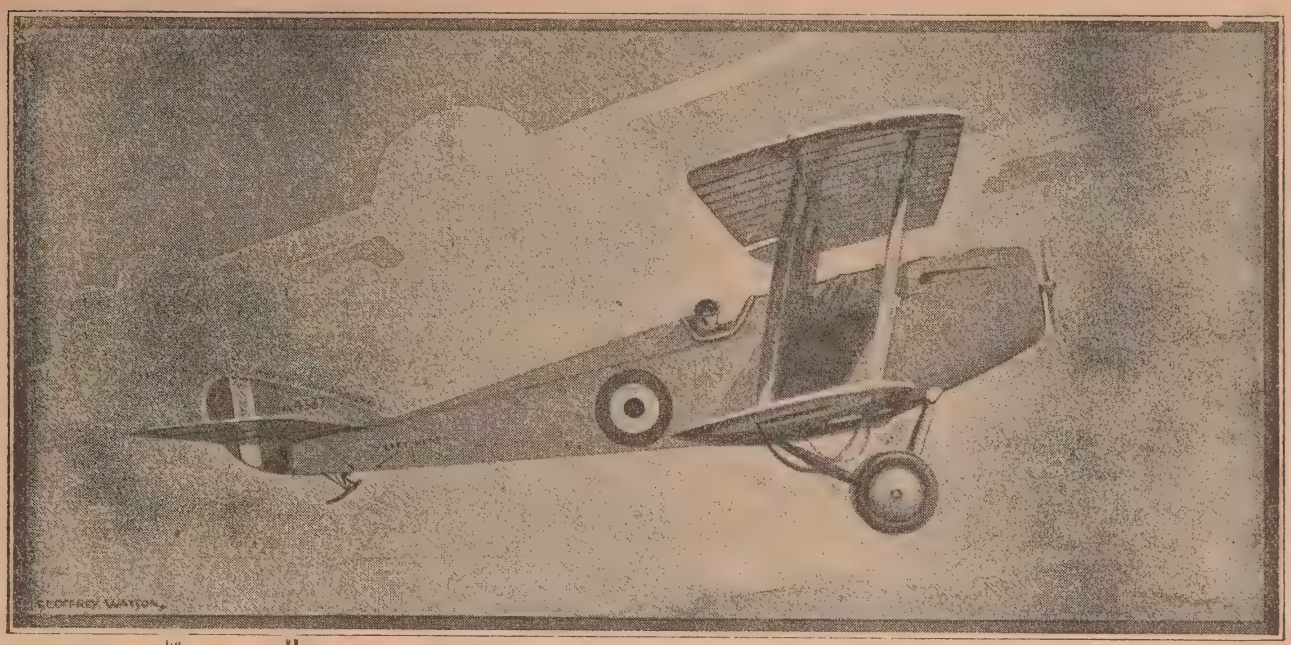
1,530 Chaser machines.
300 Protecting biplanes.
1,020 Reconnaissance machines, and
156 Bombers.

The latter category included 12 "giants."

She lost 500 machines between July 13th and Nov. 11th, and delivered 1,700 under the terms of the armistice, leaving only 800 machines, mostly observation and range-finding aircraft. This state of affairs (says the "Excelsior") effectually prevents any thought of aggression from the air.

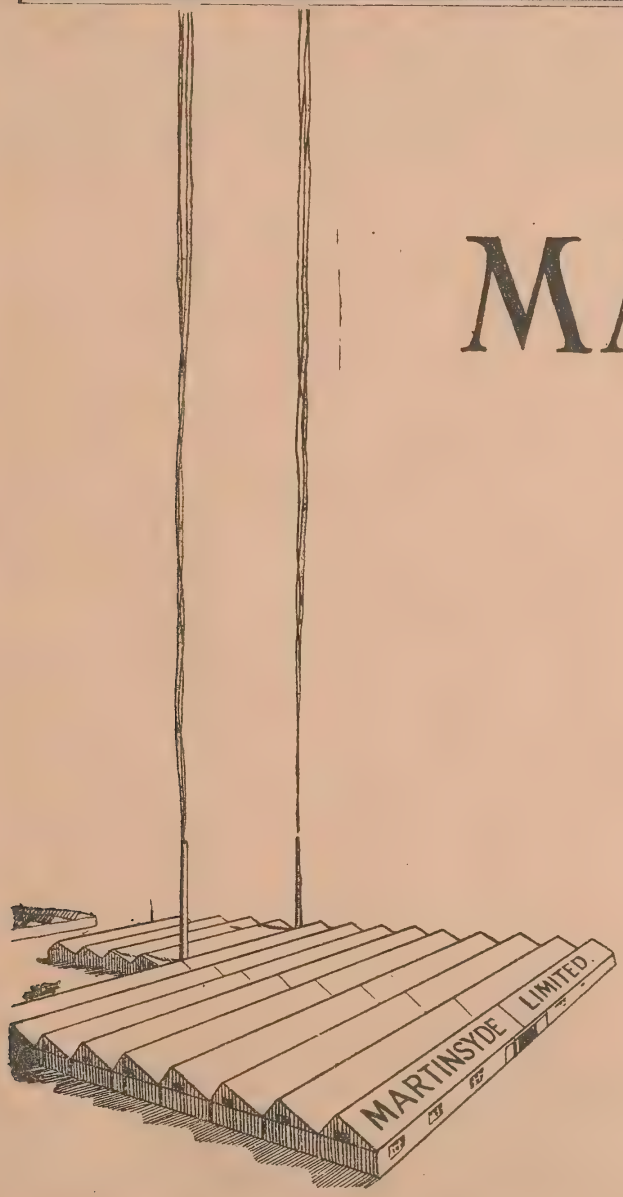
THE ROYAL AERONAUTICAL SOCIETY.

Owing to the proximity of the General Election on Dec. 14th, the lecture by Mr. Grahame-White, to be held under the auspices of the Royal Aeronautical Society, on Civil Aerial Transport, on Dec. 11th, at which Lord Northcliffe was to preside, has been postponed. The lecture will be given at an early date after Christmas, which will be announced in due course.





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RAIDS BY THE INDEPENDENT FORCE.

Since the commencement of the systematic bombing of Germany, 709 separate raids have been carried out against military objectives in German territory. This figure includes the 209 raids made upon the German aerodromes at Morhange, Frescaty, Boulay, Buhl, etc., which were established for the defence of the Rhine towns. But the attacks carried out against the Belgian coast towns—Ostend and Zeebrugge—and enemy transports, ammunition dumps, and concentrations of troops, are not included.

Previous to the establishment of the R.A.F., Independent Force, these raids were carried out by R.N.A.S. units, but from June 6th, 1918, the Independent Force, operating from a base at Nancy, did all long-distance bombing. The famous railway triangle, upon which 91 effective attacks were made, of which the vital junction was Metz-Sablon, suffered very heavily. The factories and station at Thionville have been bombed 52 times with good effect. Many large towns in Germany have been attacked several times, the largest number of raids being carried out against the chemical works and aeroplane factory at Mannheim, which were bombed 29 times.

Besides these figures for 13 months, previous to October, 1917, British aviators carried out a number of raids over German territory, as did also the French aviators. It is of interest to note that there have only been just over 100 attacks on England by enemy aviators during the whole period of the war, which compares favourably with our bombing expeditions against the enemy. And many of the German attacks were of a purely nominal nature, in many instances only one machine crossing the coast, and very often not dropping any bombs. But all of these have been counted as bona-fide raids.—R. M.

ANTI-SUBMARINE BOMBING.

According to a Press Bureau communiqué, presumably official, the high accuracy of British bombing is proved by the wrecked condition of the submarine shelters at Bruges.

It is evident that in the very early days of the war, the Germans adapted the harbours at Zeebrugge and Ostend for use as permanent bases and repair stations for their submarines, the original boats being built at the Hoboken Works, near Antwerp. The first large repair works appear to have been situated at the Atelier de la Marine at Ostend, but it is probable that the docks at Bruges, which are connected with Zeebrugge by a ship canal, were being developed at an early period of the war.

Largely owing to offensive naval operations off the Belgian coast, assisted by aircraft, the two harbours became exceedingly dangerous shelters for such comparatively fragile craft as submarines, and after the bombardment of May, 1916, the large floating docks at Ostend were towed round to Zeebrugge, and thence up to Bruges.

Following up this initial victory with great vigour, British aviators commenced, in January, 1917, an intensive bombing campaign, directed chiefly against the docks at Bruges, the lock-gates and harbour at Zeebrugge, and the ship canal itself, which was, of course, the only outlet by which the submarines could gain access to the sea.

No fewer than 6,123 bombs were dropped upon Bruges docks alone, while a similarly large number were dropped upon Zeebrugge and Ostend.

Apart from the immense and continuous damage caused to the Mole, sidings, quays, railways and shipping at Zeebrugge, the lock-gates themselves—a singularly difficult target—were kept practically always under repair. Indeed, on several occasions, as the result of direct hits by British aviators, one of the gates had to be removed for repairs by immense floating cranes, and a spare gate fitted.

About this time the enemy began to build the giant submarine shelters at Bruges. No fewer than 4,000 workmen were continually employed upon these structures.

At the time of the evacuation, eight of the shelters had been completed in No. 1 Darse, and a ninth was under construction. The shelters are made entirely of ferro-concrete. The roof, which is 11 ft. thick, is supported by some hundreds of massive concrete pillars, each 2 ft. square and 25 ft. high.

Owing to the great damage which was caused by the Germans upon their evacuation of the docks, it is difficult to differentiate between their deliberate work and the destruction resulting from the terrific bombing from the air during the last few months of the war. Information from various sources makes it clear that the enemy's decision to give up the Port of Bruges, as a repair base for submarines, was due to his inability to defend it against attacks from the air, except at unjustifiable expense in men and material.

American, English and Belgian residents in Bruges vouch for the accuracy of the British bombing, and its effect upon the German military and naval personnel.

The biggest explosion ever experienced in Bruges was caused by British aviators at La Brugeoise Works on May 31st, 1918. The concussion was felt all over the city, and the flames lit up the sky for many miles around. It is said that the explosion wrought so much destruction of valuable machinery that work was never properly resumed in these factories.

THE MARSHAL'S ESCORT.

From the "Daily Chronicle" of Dec. 3rd:—

The Air Ministry are proud of a remarkable flying achievement associated with the visit of Marshal Foch and M. Clemenceau.

Arrangements were made for a grand escort of machines for the whole of the journey from France to London, but the meteorological report declared the weather conditions to be absolutely unfit for cross-Channel flying, and accordingly it was taken for granted that the project would be abandoned.

In spite of everything, however, a "Daily Chronicle" representative was informed yesterday, the plan was carried out exactly as arranged. A fleet of 27 aeroplanes escorted the steamer across the Channel to Folkestone, and from Folkestone onwards two flights convoyed the train right into the metropolis.

The achievement is unique even in the wonderful records of the Air Ministry. The officials, thinking that the weather conditions had put a stop to the venture, were unaware that it had even been attempted until long after the machines had returned to their stations.

UNFORTUNATE!

The following paragraph from the "Daily Telegraph" may possibly be of some interest:—

"There was general public expectation that Berlin would be bombed before the armistice was signed. In many places there was distinct disappointment that the Royal Air Force did not have that satisfaction. An 'Evening Standard' representative was informed on Nov. 27th on official authority 'that everything was ready.' The war ended three days too soon.

"Everything was prepared, down to the detail of thermos flasks. Nineteen huge Handley Pages were prepared. The aviators chosen under General Trenchard's direction were among the keenest and most experienced on the Western Fronts. Trial flights with bombs weighing 3,500 lbs. (and not 3,000 lbs. as reported) had been made. The date fixed was Nov. 9th—Lord Mayor's Show Day. It proved 'dud,' the weather conditions being wholly unfavourable for the start. The flight was postponed until Monday, 11th. At five o'clock that morning the armistice was signed—and Berlin was not bombed."

A GERMAN VIEW.

Reuter's Special Correspondent with the British Army sends the following extracts from the captured diary of a German officer of the 73rd Fusilier Regiment of the 111th German Division covering the period from early in April to nearly the end of July this year, during which time he was in what may be roughly called the Bapaume-Albert area:—

May 18th.—I march our little crowd across country to our destination. There are 17 enemy machines overhead. Conscious of our might, not a single German machine shows up. Although the newspapers cannot brag and bluster enough when they publish anything about the Flying Service, our aviators themselves admit that we are inferior to the enemy in numbers and equipment. In any case, they are not as impudent as Tommy. Day and night he is overhead, dropping bombs past all counting. There have been very fine aviators on our side, but in this respect Tommy is not second to us.

July 14th.—Tommy is quite well behaved. Every morning an aviator, whom we call the "trench inspector," comes over and drops two bombs on the village.

July 19th.—About midnight aviators arrived as usual, the anti-aircraft defences functioned admirably. It sounded like drum-fire. The searchlights were playing; the machine-guns rattling; it was a devil of a row. The inhabitants were in the cellars; they have furnished them quite nicely. They had become accustomed to it under shell-fire. We had visits from aviators every day, at 11 a.m. and 5 p.m. With clock-work certainty the flights arrived, dropped their eggs, and disappeared. As a rule our Archies could not touch them as they flew at a height the shell never reached. Our fliers showed very little activity here; I do not know in what our superiority consists . . . At night the aviators worry us a great deal; two officers of the 3rd M.G. Company were wounded, and the 11th Company, too, had one or two casualties from bombs. One man with six children, who was employed as kitchen orderly, fell a victim to this treacherous arm. We have got a lot of work with the training of the men. They can't shoot, and in other ways they lack the most elementary notions of a soldier. I have long ceased to lose my temper. . . .

(Returning from leave.) On the 11th we went into the line. Great liveliness in the air prevails above us, not from our side, but from the enemy's. During our last day in rest Tommy crashed three contact patrols of ours. The enemy has got faster and more flexible machines, and one can only pity our clumsy things, together with their occupants, when, attacked by three or four flying men, they are under such hot fire that they have no alternative except to crash. All three crashed in flames. In the night of 13th-14th another reconnoitring plane was attacked by four Tommies; it was in a very tight place, but was just able to get away, which was the wisest thing he could do.

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We have been making Propellers ever since 1909. Our designs include every type—from the air screw used on the launches on the weed-grown rivers of India, and the air screws used by Sir Ernest Shackleton on his petrol sledge in his Polar Expedition, to the highly efficient props on the latest aircraft.

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Steele's Ad. Serv

BUSINESS FLYING.

The following letter appeared in the "Times" of Dec. 2nd :—

Sir,—My attention has been drawn to the following sentence which appeared in an article entitled "Business Flying," referring to the report of the Civil Aerial Transport Committee, in your issue of Nov. 25th :—"Such things as folding wings, already used in the Handley Page machine, will, no doubt, be increased, and an all-round improvement in engines is still certain to come." This sentence would give the reader the impression that folding wings had been introduced by Messrs. Handley Page (Limited), whereas the facts are as follows :—In the year 1913 my firm made the experiment of fitting to a "Short" seaplane a device which enabled the wings to be folded back close to the fuselage and reduced to about one-quarter the space necessary for storing the seaplane, whilst the operation of folding back or opening out the wings could be carried out in two or three minutes. The device was an immediate success, and was recognised as such by the Admiralty and by the aeronautical Press. My firm attach the greatest importance to this device, since its introduction revolutionised the use of seaplanes, enabling them to be carried on board and operated from His Majesty's ships in all parts of the world—for instance, the North Sea, Atlantic Ocean, Mediterranean, Mesopotamia, Lake Tanganyika, etc. It also enabled a 225-h.p. "Short" seaplane to be available to report the position and movements of the German Fleet at the Battle of Jutland. The device has saved this country many hundreds of thousands of pounds by the reduction it has brought about in the storage accommodation necessary for both aeroplanes and seaplanes, and on account of war necessities my firm has so far made no attempt to limit its use by other manufacturers.

I am, Sir, yours faithfully, Oswald Short.

Whitehall House, 29-30, Charing Cross, S.W.1.

MR. LLOYD GEORGE AND VICTORY.

The honorary freedom of Newcastle-on-Tyne was conferred upon Mr. Lloyd George in the afternoon of Nov. 29th in the Palace Theatre. Mr. Lloyd George said, during his speech :—

The victory has been due to the dauntless valour of our men on the sea, in the air, and on land, and it has been due to the skill and industry of our working men and working women.

PARLIAMENTARY CANDIDATES.

According to the "Daily Chronicle," the situation in Islington (East) is complicated by the presence of four candidates, one of whom is Lt. A. Baldwin Raper, R.A.F., Official Coalition.

Lt. Raper served as a pilot for two years during the war.

It is announced in the "Times" of Dec. 2nd that Capt. Wedgwood Benn, D.S.O., D.F.C., who resigned his candidature for Whitechapel, is standing for Leith in the Liberal interest.

FLYING IN A FOG.

From the "Daily Chronicle" of Nov. 28th :—

Two aviators piloting different machines and carrying 18 passengers on a return flight from France had a rather alarming experience. They crossed the Channel together, and on reaching the London area flew into a dense fog.

It was impossible to pick up any land-marks, but the pilots, with only the aid of compasses, "felt" their way through the fog until they arrived in the vicinity of the aerodrome. Here their arrival was awaited with some anxiety, as a message had been received that they would arrive at 4.30.

No system of signalling had been arranged to guide the aviators, and a minute or two after the half-hour it was thought that they must have landed elsewhere. At 4.35, however, the machines were heard approaching, and five minutes later made a perfect landing at precisely the same spot from which they started, within a few seconds of each other and about 300 ft. apart.

A DAMAGED CHURCH.

All Saints' Church, St. Ives, Huntingdon, was seriously damaged last March by a British aeroplane colliding with the spire. The spire was cut in half, and two portions of it fell into the north and south aisles, causing great gaps in the roof and much internal damage. The aviator was killed.

The Government will pay £3,873 towards the cost of repairing the church, leaving £3,216 to be provided. As there is a population of only 3,015 the vicar, the Rev. O. W. Wilde, and the churchwardens appeal to the public for aid in restoring the beautiful fifteenth century building.

A CURIOUS HISTORY.

An aeroplane with a strange history figures in an exhibition of the Australians' war trophies at Australia House, Strand, which was opened by Mr. Hughes on Dec. 2nd.

This is a German Albatros scout, and it was brought down by an Australian pilot and his observer, who were immediately afterwards shot dead. Their own machine, however, continued flying uncontrolled for some hours till the petrol ran out, when it glided down, landing with very little damage 50 miles from the scene of the fight.

A U.S. RECORD.

Reuter's Washington correspondent sends the following message, dated Nov. 30th, for publication :—

The Navy's first tri-motored seaplane is said to have broken all records for the number of persons carried, when it flew with 50 persons on board from the Naval Air Station at Rockaway to New York on Wednesday, Nov. 27th. The giant machine is equipped with three Liberty motors, developing 1,200 horse-power, and has a cruising speed of 80 miles an hour.

CO-OPERATION.

According to a message from Copenhagen, dated Nov. 28th, that morning at 6 o'clock two squadrons of British warships passed the Skaw, steaming slowly southwards. There were 22 ships—cruisers, destroyers, mine-sweepers, and transport steamers —with aeroplanes.

WAGES AND ARBITRATION.

The Ministry of Labour calls attention to the Wages (Temporary Regulation) Act which passed through Parliament last week. The Act, which repeals Part 1 of the Munitions of War Act, 1915, renders necessary certain alterations in the procedure hitherto adopted for the settlement of differences as to wages.

The main purpose of the new Act is to secure the maintenance for a period of six months of the minimum wages generally applicable at the date of the signing of the Armistice in each trade or branch of a trade or district to each class of workmen, except in so far as these minimum wages are varied by arbitration or by agreement. "Workmen" includes men and boys, women and girls, and the wage elements dealt with by the Act are the recognised time rate or other basis for determining wages (i.e., in the various trades, a shift rate, or piece-work price list, or scale of tonnage rates, etc.), the usual allowances for overtime, night-work, week-ends, or holidays when any of these are worked, and the general war bonuses or war advances where these are paid in addition to the time-rate or other wage basis.

The wage resulting from these elements, ascertained with regard to classes of, as distinct from individual workmen, is called "the prescribed rate of wages." Other elements in wages are not dealt with by the Act, nor are the wages of individuals. Such matters are for arrangements between the parties concerned.

The Act contains special provisions in the case of the wages of women and girls.

During the six months' period for which the Act provides, the prescribed rate of wages may be varied either as the result of arbitration or an agreement or settlement approved by the Minister of Labour. The Act provides for the establishment of a Court of Arbitration, which will deal with differences referred to it by the Ministry of Labour in cases where the parties have been unable to settle as to what the prescribed rate should be.

It will be observed that the Wages Act alters in important respects the wages position under the Munitions of War Acts. Minimum rates of wages being provided for, it leaves all other questions as to wages open to free negotiation. The Minister of Labour trusts that this freedom to negotiate will be generally exercised in a conciliatory spirit, so that satisfactory wage arrangements of a permanent character may be established in each trade before the Act expires.

Questions which do not come under the Wages Act, and which cannot be settled satisfactorily by the employers and workpeople concerned or by the Employers' Association and the Trade Unions, may, with the consent of both parties, be referred to arbitration through the Ministry of Labour under the Conciliation Act, 1896. Requests for arbitration under this Act should, if possible, be made jointly by the parties concerned. Under this Act the Ministry of Labour can appoint an arbitrator only with the consent of both sides.

The Minister of Labour has established a Wages and Arbitration Department (under Mr. H. J. Wilson, C.B.E., Assistant Secretary) to deal with questions relating to wages, etc., under the Wages Act and the Conciliation Act, 1896. Correspondence arising out of these Acts should be addressed to the Secretary, Ministry of Labour, Montagu House, Whitehall, S.W.1.

THE COMRADES OF THE GREAT WAR.

A women's section of the Comrades of the Great War has been formed. Those eligible for membership are the wives, widows, mothers, sisters, and daughters of all members of the Services, past and present, ex-members of the Nursing Services, and of the Q.M.A.A.C., W.R.N.S., W.R.A.F., and V.A.D.

This section will endeavour, among other things, to find employment for members, to give assistance in maternity cases in co-operation with maternity homes, to look after child welfare, and to assist in finding convalescent homes.

The hon. Secretary's office is at No. 8, Grosvenor Crescent, S.W.1.

COMMERCIAL AERONAUTICS.

Those commissioned officers or otherwise seriously proposing to interest themselves in Commercial Aeronautics after the war, as pilots or ground staff, are invited to communicate with Capt. Swinton, care of The Aeroplane, 166, Piccadilly. In the first instance no particulars except rank, name, and address are required.



VICTORY

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In reviewing the great deeds of the Air Forces, do you realise how much of their success was due to

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THE K·L·G SPARKING PLUG

THE DEVELOPMENT AND WORK OF AIRSHIPS.

The following, presumably official, account has been received from the Press Bureau as part of a serial narration entitled, "The Royal Air Force, Week by Week":—

Now that hostilities have ceased it is possible to tell in brief the story of Royal Air Force activities during the war in the development of airships. As these craft have worked almost entirely with the Navy, their work has necessarily been kept as the other operations of the Silent Service.

The outbreak of war found the Royal Navy in possession of seven airships, all of the non-rigid type. On Oct. 31st, 1918, the number was 103, including rigids and non-rigids. Four of the original seven had been taken over from the Army on Dec. 31st, 1913, and a few words may be said about their history. The first British airship, "Nulli Secundus," appeared in the air in 1907. She was of the semi-rigid type—that is to say, she had a rigid framework running fore and aft along the bottom of the envelope, and to this the car was attached. She was deleted before the outbreak of war. The "Beta" dated from 1910. She was a non-rigid, and the car was rigged to a girdle of fabric stuck and sewn round the envelope. Later in the same year the "Gamma" was produced. The chief innovations in her construction were that her envelope was made of fabric (whereas the two previous ships had envelopes of gold-beater's skin). She was the first Army airship to be fitted with swivelling propellers. The "Delta," built in 1912, was remarkable for the use of "dope" on her envelope to prevent gas leakage. The "Eta," built in 1913, gave her name to the "Eta patch" system of attaching rigging cables to the exterior of the envelope. This was a great improvement on the girdle system. These last four ships were in use when war broke out, and the "Beta" observed for the Belgian artillery in 1915.

The Navy commenced airship experiments in 1911 with a rigid, which was accidentally broken in two before she made a flight. Nos. 2, 3, and 4 were non-rigids. Of these, No. 2 was the parent of the S.S. (Submarine Scout) type. No. 3 was an Astra Torres, trilobe in shape, with internal rigging, built in Paris. No. 3 patrolled the Channel during the crossing of the Expeditionary Force, and was subsequently for a time employed in Belgium. No. 4 was a Parseval, bought from Germany, of 360,000 cubic feet capacity. The Parseval type is rigged externally to a girdle. On the night of Aug. 5th-6th, 1914, this ship patrolled the Channel from 7 p.m. till 5.30 a.m.

Non-Rigids.

During the war four types of non-rigid airships have been constructed in Great Britain:—Parseval, Submarine Scout, Coastal, and North Sea. Of the last three, the S.S. is rigged externally to Eta patches, while the Coastal and North Sea use the Astra system.

Small S.S. ships were first constructed in 1915, and at once proved their value. An improved class known as S.S. Zero held the field until the advent of the S.S. Twin in 1917. The Zero has a blunt-nosed envelope with its greatest diameter about a quarter of the length from the nose. Its cubic capacity is 70,000 ft., its length is 145 ft., and its greatest diameter 29 ft. The car carries a crew of three. The record flight for a Zero lasted for 50 hours, 55 minutes.

The Twin has, as its name implies, twin engines, two 75 h.p. Hawks. Its capacity is 100,000 c.f. Its length is 164.5 ft., the greatest diameter being about 32 ft. It is considered a most useful and satisfactory class, and is now supplanting the other S.S. classes.

The Coastal type has a capacity of 200,000 c.f., and its car will hold five men. Airships of this type did most of the long-distance patrols during the last two years of the war, and were largely employed in convoying ships from beyond the Scilly Isles up the Channel. Their work has been most satisfactory, but they are now being supplanted by an improved class known as the C* (Coastal Star). It is slightly larger (211.56 ft. long and greatest diameter 42.8 ft.), and the envelope is of a better streamline shape to minimise air disturbance. The first C* appeared in January, 1918, and nine more were added before Oct. 31st. The C* has a 110 h.p. Berliet forward and a 260 h.p. Fiat aft.

The "North Sea" type was designed as a scout to act with the Fleet or to carry out patrols of 20 hours. Its envelope has a capacity of 360,000 c.f., and the car can carry a crew of 20, the normal crew being 10. Since the signing of the Armistice a North Sea ship has made a flight of 61 hours 21 minutes, which is a record for a non-rigid, and is believed to have been surpassed only by two performances of German Zeppelins. The length is 262 ft., greatest diameter 55 ft., and it is fitted with two 275 h.p. Eagle or two 260 h.p. Fiat engines.

Rigids.

After the misfortune to the first naval airship no rigid was produced in Great Britain until December, 1916, so that this country was for the first two years of the war some twelve years behind Germany in the construction of rigid airships. By January 1st, however, four British rigids were in commission. This type is composed of frames of duralumin girders. The whole framework is enveloped in a fabric cover. Inside are the gas bags, which are thus protected from the action of sun and moisture. No. 23, which has recently been seen several times over London, is 540 ft. long, and has a cubic capacity of approximately 1,000,000 ft. A more recent British rigid has a capacity 50 per cent. greater, while others, larger still, are on the stocks.

Functions of Airships.

During the war the functions of airships have been two, namely, to combat the submarine menace, and to act as scouts for the Fleet. Bomb-dropping raids over land were not attempted by British airships, and were only considered of minor importance by the Germans.

Rigid airships are the best of scouts for a Fleet. The Germans owed their escape after the battle of Jutland to their Zeppelins. It was Zeppelins which made possible the escape of the flotilla which raided Scarboro' on Easter Monday, 1916; and it was Zeppelins which enabled U-boats to torpedo H.M.S. "Nottingham" and "Falmouth."

The struggle with the submarine menace entailed two sorts of work, patrol and convoy. While on patrol the airships, particularly the S.S. type, were able to compass the destruction of numerous submarines, either by using their own bombs or by summoning surface craft. They were also able to direct vessels out of a danger zone. Mines were likewise observed and destroyed.

The system of convoy by airship proved extremely successful. No ship was ever sunk while under escort from the air. This work was very arduous and required constant vigilance.

Airships are not so independent of weather as are heavier-than-air craft, but it is interesting to note that in 1918, up to the signing of the Armistice, there were only nine days on which no flying took place.

It is a popular belief that airships require an extravagant number of mechanics. When the number of flying hours is set against the number of hands employed, airships are shown to be more economical in man-power than heavier-than-air craft, as the following figures show:—

	Airships.	Aeroplanes and Seaplanes.
Men employed per hour flown	1.62	3.52
Hours flown per man employed	1.04	0.40
Average duration of patrol	6 hrs. 17 mins.	2 hrs. 2 mins.

The following table shows the hours flown from 1915 to Oct. 31st, 1918:—

	Hours
1915	339
1916	7,078
1917	22,389
1918	53,554

The total casualties to airship personnel during the war were 239, of which 48 were fatalities due to flying accidents and enemy action. For every fatality suffered, 42,548 miles were flown. In the airship service credit is claimed, not for losses suffered, but for losses inflicted on the enemy, and for averting losses from one's own side. When the potential destructiveness of each U-boat is considered, the services of the airships in securing the food supply of Great Britain and escorting troopships cannot easily be overrated.

BRITISH PRISONERS IN AUSTRIA.

Relatives and friends of British prisoners in Austria will be glad to hear that all possible measures have been taken to assist such prisoners returning towards the Armistice line held by the Allied troops in Austria. Ambulances and lorries with medical personnel have been detailed for this duty and went forward several days ago. An office has been opened at Udine for the reception and disposal of interned civilians who will be fed and clothed prior to being sent on to France or England. Information of arrival of all prisoners, etc., will be sent officially to relatives at the earliest possible moment.

REPATRIATION.

The Secretary of the War Office announces that it has recently been decided to repatriate at the public expense under certain specified conditions, wives and families of officers and other ranks serving in the Royal Navy, British Army, and the Royal Air Force who are themselves entitled to passage. The broad intention is that repatriation should be given to such families whose presence in the United Kingdom was due to the war, not to those coming to the United Kingdom under present conditions. In order, therefore, to prevent any misapprehension it is notified that the concession announced in the Press on Nov. 26th, 1918, will not apply to wives and families embarking for the United Kingdom after that date.

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TERMS OF SERVICE FOR THE R.A.F.

1. In order to provide the aviators for overseas garrisons, and the necessary reserves at home, it has been decided that aviators may specially extend their Air Force service for periods of approximately 2, 3 and 4 years, respectively, from date of extension, the object being to obtain equal numbers in these three classes. The conditions, terms, etc., under which service may be extended are now forwarded for the information of all ranks, but no action in the direction of accepting men, under the conditions laid down, is to be taken until further detailed instructions are sent.

With a view to simplicity, the term "special extension of service" is used throughout these instructions, but it must be understood that this term includes also re-engagements, etc., according to the procedure finally decided as necessary under the present terms of service of each individual aviator.

2. Men Eligible to Extend :—

(a) Men serving on "Duration of War" engagements.

(b) Men serving on Normal Engagements, whose term of Colour Service has expired, or is due to expire, before April 1st, 1919.

3. Periods of Service.—Men will be required to extend their service for one of the following periods :—

(a) From date of extension to any date between Jan. 1st, 1921, and June 30th, 1921.

(b) From date of extension to any date between Jan. 1st, 1922, and June 30th, 1922.

(c) From date of extension to any date between Jan. 1st, 1923, and June 30th, 1923.

The actual date of discharge in each individual case to be determined within the limits laid down above, by the Air Ministry, according to the requirements of the Royal Air Force from time to time.

4. Qualifications :—

(a) Must be physically fit for service in his Air Force trade at home or abroad.

(b) On extension of service, must not be over the age of 38.

5. Conditions :—

Aviators who wish to extend their engagements, but for whom vacancies in the Peace Establishment, in their existing ranks, do not exist, may, subject to the conditions set forth in the preceding paragraphs, be allowed to extend their service in the lower ranks. In such cases, a statement signed by the aviator, to the effect that he is willing to accept the lower rank and pay, is to be attached to the application for extension. (F.S. Form 82.)

(b) It must be understood that acceptance for extension of service will be subject to the following limitations :—

(i) The number that can be accepted in the rank of serjeant must necessarily be limited, as it must be in proportion to the number of rank and file extending ;

(ii) The number extending in any trade must be limited to the requirements of that trade ;

(iii) The numbers extending for each of the three periods referred to in Par. 3 must be approximately equal.

6. Terms :—

(a) Pay.—The present ordinary rates of pay and allowances for the Royal Air Force will continue in force for the period of extension of service, and the rates of pay for any aviator voluntarily continuing to serve after the termination of this extension will be the normal rates then in force.

Men originally transferred from the Navy and Army (including the Royal Naval Air Service and the Royal Flying Corps) who are in receipt of special emoluments as a vested right will be granted the regulated pay and allowances of the Royal Air Force rank only. Similarly, men enlisted at special rates of pay—e.g., drivers, clerks, etc., and ex-Royal Naval Air Service drivers in receipt of driving pay, will be offered the normal emoluments of their present rank only.

All men subsequently promoted will come on to the then existing rate of pay appropriate to the rank.

(b) Service, after the termination of the war, will not count for increased "war pay."

(c) The rates of separation allowance now in force will be continued in the case of men in respect of whom they are now issuable.

(d) Bounties.—In addition to any pension, reserve pay or gratuities to which men may be entitled on account of war or other service, bounties at the following rates will be given to men extending their service for one of the three periods laid down in Par. 3, provided they so extend their service before :—

In the case of units at home and with the B.E.F., Jan. 1st, 1919 ; in the case of units in the Middle East, Mediterranean, Canada, and America, Feb. 1st, 1919 ; and in the case of units in Mesopotamia and India, March 1st, 1919.

Men extending up to any date between Jan. 1st, 1921, and June 30th, 1921, three sums each of £6 13s. 4d. :—The first payment on extension of service ; the second payment on completion of first year ; and the third payment on completion of second year, or on discharge. Total, £20.

Men extending up to any date between Jan. 1st, 1922, and June 30th, 1922, four sums each of £10 :—The first payment on extension of service ; the second payment on completion of first year ; the third payment on completion of second year ; and the fourth payment on completion of third year, or on discharge. Total, £40.

Men extending up to any date between Jan. 1st, 1923, and June 30th, 1923, five sums each of £10 :—The first payment on extension of service ; the second payment on completion of first year ; the third payment on completion of second year ; the fourth payment on completion of third year ; and the fifth payment on completion of fourth year, or on discharge. Total, £50.

(e) Special Leave to the United Kingdom will be granted to men extending for one of the periods laid down in Par. 3, as follows :—

Men extending up to any date between Jan. 1st, 1921, and June 30th, 1921—two months ; men extending up to any date between Jan. 1st, 1922, and June 30th, 1922—three months ; men extending up to any date between Jan. 1st, 1923, and June 30th, 1923—three months.

This leave will be given as soon after extension of service as the exigencies of the service permit, but in the case of men going to Overseas garrisons, it will, in any circumstances, be given before they proceed to such garrisons.

(f) Preference will be given to single men without dependents, or with dependents drawing low rates of allowance.

Consideration may be given to the applications of other men, but passages to and from foreign garrisons will only be granted to a limited number of families.

In the case of married men, the present rates of separation allowance, when otherwise admissible, can only be guaranteed to the families of such men as are married at the date of this Order.

The privilege of passage for a family cannot be commuted for a money bounty.

7. A further communication as to the number up to which men may extend their service in each trade will be sent you in due course.

8. In the case of men extending for twelve years, under letter and memorandum C. 56,556 of Nov. 19th, a bounty of £50 will be paid, as laid down in Par. 6 (d), and the terms of service will be as in this order, for the period of four years. Subsequently, ordinary Royal Air Force Regulations will apply.

DEMOBILISATION AND RESETTLEMENT.

The Air Ministry is anxious that it should be generally understood that the Military situation does not admit of any officers or airmen being released from service from the Royal Air Force except on compassionate grounds as hitherto, and, in a limited number of special cases, where particular individuals or classes are urgently required for the purpose of reconstructing industrial conditions prior to demobilisation.

The responsibility for dealing with all applications in the latter class of case rests with the Ministry of Labour, which is making a separate announcement as to the procedure to be adopted.

R.A.F. CASUALTIES.

The Secretary to the Air Ministry issues the following statement of the casualties to officers and men of the Royal Air Force from April 1st, 1918 (the date of the establishment of the Force), up to November 11th, 1918 :—

The casualties of the Royal Naval Air Service and the Royal Flying Corps from the outbreak of war up to April 1st, 1918, the date of the amalgamation of the two Services, have been included in the figures already published by the Admiralty and War Office respectively. These casualties will, however, be published separately as soon as they can be extracted, in order that the total casualties of the Flying Services during the war may be on record :—

	Officers.	Other ranks.
Killed (including training casualties, died from wounds, and died from other causes)	1,551	1,129
Wounded	2,357	631
Missing (including prisoners)	1,612	225
Interned	45	39
Totals	5,565	2,024
Grand total		7,589

The numbers shown above as "missing" include 377 officers and 66 ranks who have been reported to have been taken prisoners.

SERVICE UNIFORMS.

The Secretary of the War Office announces that all restrictions regarding the sale and use of P.A. cloths and the manufacture and sale of officers' badges and buttons are now withdrawn. Instructions are accordingly being issued to manufacturers and others concerned. It is understood that the contract prices of uniforms are now removed.

It is also stated in the daily Press that as from Jan. 1st all new R.A.F. uniforms must be made of the new blue cloth.

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FROM THE "LONDON GAZETTE."

AIR MINISTRY, Nov. 26th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officers, 1st Cl.—T. B. Wood, C.M.G. (Col. in Army), and is granted a temp. commn. as Col., June 22nd, seny. from April 1st) (substituted for notification in "Gazette," July 9th). And to be actg Lt.-Cols. if not already holding that rank :—H. E. Day, D.S.O., M.V.O. (Maj., R.E.), and is granted a temp. commn. as Maj., Oct. 14th, seny. from April 1st; Maj. (actg. Lt.-Col.) H. A. R. Aubrey, M.C., Nov. 11th.

Staff Officers, 2nd Cl.—And to retain the actg. rank of Maj. whilst so empld. :—Capt. (actg. Maj.) W. B. Adams, Nov. 6th; Capt. (actg. Maj.) J. H. S. Annesley, Nov. 13th.

Staff Officers, 3rd Cl.—Lt. (actg. Capt.) E. E. Colquhoun, and to retain the actg. rank of Capt. whilst so empld., Nov. 15th; (T.) F. V. Stillingfleet (temp. Capt., R.E.), and is granted a temp. commn. as Capt., April 1st.

Staff Officer, 4th Cl.—Capt. E. Cameron, vice Lt. J. Duncan, Nov. 15th.

The following temp. appts. are made :—Staff Officers, 3rd Cl.—And to be actg. Capts. whilst so empld., if not already holding that rank :—P. C. Carr (temp. Capt., Spec. List), and is granted a temp. commn. as Capt., with seny. from April 1st; St. B. Goldsmith, M.C. (temp. Lt., R.E.), and is granted a temp. commn. as Lt., with seny. from April 1st (Oct. 11th); Lt. F. W. Memory, Nov. 11th.

FLYING BRANCH.—Capt. A. T. Williams to be actg. Maj. whilst empld. as Maj. (A.), Oct. 28th.

Capt. (actg. Maj.) J. S. D. Berrington to be graded for pay as Maj. whilst empld. as Maj. (K.B.), Oct. 10th.

Capt. L. Ritson to be graded for pay as Capt. (O.) whilst empld. as Instructor, Sept. 26th.

Lts. to be actg. Capts. whilst empld. as Capts (A.) :—R. W. Dobbie, A.F.C., Oct. 24th; F. F. Wessel, Nov. 8th; G. N. Blenkerhasset, R. F. H. Norman, A. C. Sanderson, Nov. 11th; A. Sleep, Nov. 14th; L. N. Hollinghurst, D.F.C., Nov. 18th; Sec. Lt. N. Cooper to be actg. Capt. whilst empld. as Capt. (A.), Nov. 18th; Sec. Lt. (Hon. Capt.) W. A. Moore to be graded for pay as S.O. 2, whilst specially empld., Oct. 17th.

Lts. to be Lts. (A.), from (Obsrs. Officers) :—J. M. Bright, April 9th; R. G. Torrance, June 27th; J. B Hall, July 12th; E. Rhodes, Aug. 2nd; K. W. Mackechan, Aug. 30th; R. A. Tarleton, Sept 1st; A. Leach, M.C., Oct. 25th; W. C. Thompson, K. Norwood, Oct. 26th; G. B Pershouse, W. R. Baker, Oct. 28th; J. S. Millar, Oct. 29th; F. W. Cunliff, G. H. Bennett, F. W. Thomas, J. W. Baker, Oct. 21st; R. S. Mackenzie, Nov. 3rd; M. H Scott, Nov. 4th; A. C. Thornton, Nov. 6th; M. A. S. Vaile, Nov. 9th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.) :—R. H. M. Sheppard, May 28th; G. Roberts, July 18th; H. G. Bennett, July 26th; W. J. Millen, July 29th; H. A. Bartlett, Aug. 13th; C. A. Holt, Aug. 14th; G W. Sweney, Aug. 19th; J. B. Edwards, Aug. 21st; W. H. S. Davis, Aug 30th; F. C. Ward, Sept. 8th; F. W. Savignac, Sept. 28th; M. G Van de Water, Oct. 8th; L. M. Hall, Oct. 20th; E. N. Strain, Oct. 23rd; R. G. Kirk, N. Hickson, Oct. 25th; K. B. Terry, Oct. 26th; P. H. Lambert, H. M. Best, N. S. Todd, Oct. 27th; G. A. R. Mergard, C. W. Dicks, T. R. Nichols, T. A. Hopkinson, L. B. Jordan, S. D. Hutchinson, E. O. W. Matthews, Oct. 28th; J. A. McAlpine, P. H. Perkins, S. H. West, J. H. Marland, C. C. Holy, J. Mackintosh, J. Evans, A. Swindale, P. Alderton, J Baird, Oct. 29th; W. D. Moffatt, W. K. Buchan, R. Holman, C. P. Bertioli, J. Golman, G. L. Blagrave, J. G. Barclay, H. A. Campbell, Oct. 30th; C. G. Nettleton, I. J. Sankey, L. G. Woolhouse, W. E. Cook, W. E. Blackett, E. A. O. Simpson, S. W. Beckett, D. G. Rogers, W. E. Purdy, Oct. 31st; J. H. Young, T. A. Davidson, A. R. C. Greene, Nov. 1st; W. E. Blake, D. L. Walker, Nov. 4th; H. R. Tyler, H. Rhodes, R. Clark, J. Ker, Nov. 5th; T. Searle, J. W. Hill, T. B. Alexander, Nov. 6th; J. R. McKeil, C. H. Jehan, D. R. Pettigrew, K W. Crosby, Nov. 7th; A. Laver, Nov. 9th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—184931 H. W. Kelly, May 18th; 137087 A. E. Jones, May 28th; 137980 W. E. Eastman, 137985 J. Holthouse, 137990 C. R. Stewart, 137977 J. W. Chadwick, 137981 R. P. Gain, 137900 N. E Mustoe, 185000 G. W. Wollaston, May 29th; 138000 G. D. Wilson, 137979 J. Duminy, June 11th; 110840 H. N. Hawker, June 28th; 137993 W. C. Nicholson, June 29th; 184950 E. McConnell, 184974 J. D. C. B. Furley, 184964 C. Rayner, 184920 B. K. Hartley, 184885 J. D. Bosman, 184911 C. J. Fleming, 184913 A. L. Frank, 184917 H. V. Martin, 184971 F. J. Scheepers, 184892 W. S. Cooper, 184963 R. Railton, 184909 W. Fenwick, 184974 R. H. Shutt, 184915 J. B. Geyer, 184961 C. A. Pienaar, July 23rd; 110866 E J. Orr, July 29th; 184969 D. M. Ryan, Aug. 6th; 184985 H. W. Van-der-Merwe, 137996 M. G. S. Parker, 184988 F. B. Wasserfall, 184975 L. Smith, 184993 L. B. Wiley, 184962 D. M. Pretorius, 184952 E. W. T. Meesor, 184883 P. C. C. Blair-Hook, 184924 J. B. Hodgson, 184930 P. S. Joubert, 184928 O. C. Jensen, 184929 F. N. Joubert, 184949 A. C. McIntosh, 110964 J. Woods, 184951 R. R. Mackenzie, 184937 A. L. Koller, 184935 A. W P. Kieser, 184893 R. Courteney, 184902 J. B. Downing, 184955 W. H. Morris, 184905 J. D. R. Eedes, 184922 H. R. Herbert, Aug. 8th; 184086 A G. Waite, Aug. 14th; 184925 W. I. Holmes, 110795 R. Brodie, 184881 A. S Bottom, 184899 G. S. Deighton, 184944 G. J. Malherbe, 184968 D. J Roos, Aug. 23rd; 184910 B. R. Hartley, 184895 C. C. Cuff, 184945 E. O. Maritz, 184886 C. E Bouchier, 184934 T. D. Keevy, 184898 J. P. J. de-Bruyn, 184917 R. G Granier, 184973 F. M. Seabourne, 184987 E B. Ward, 184891 G. M. Campbell, 184977 O. R. Steen, 184918 L. W. Hartley, 184900 A. S. Webb, 184903 J. O. S. Driver, Sept. 1st; 184921 E. Heimann, Sept. 7th; 184908 H. W. Featherstonehaugh, 184933 J. D. B. Kemsley, 184954 J. T. Molteno, 18458 W. E. Passmore, 184932 T. J. Kelly, Sept. 9th; 184066 C. R Rees-Gibbs, 184926 T. A. F. Jackson, 184922 L. Weinberg, 184957 W. R. Parkins, 110826 C. W. Gillies, Sept. 16th; 184970 F. R. Salomon, 184906 A. V. Elston, 184994 H. G. Willmott, 179122 G. M. Edwards, 179124 A. J. P. Hall, 179127 J. L. Pollock, Sept. 19th; 184965 O. Rees, 184936 E. T. A. Keitzman, 184904 T. Dunn, Sept. 26th; 60760 W. Denham, 881797 R. O. Reynolds, Sept. 30th; 179125 R. M. M. Houston, Oct. 2nd; 179129 L. H. E. Whitaker, 011349 T. A. Patterson, 110993 E. A. F. Wilding, 24584 A. Ellis, H/260185 R. G. Teakle, Oct 3rd; 11681 G. W. H. Vint, 100350 R. S. Sargent, 201466 H. S. Strange (since deceased), Oct. 5th; 200628 D A. Jones, 576 M. R. Haseler, 201928 W. G. Addison, Oct. 6th; 11693 D. Leech, Oct. 7th; 179128 R. Isaacs, Oct. 12th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Obsr. Officers) :—G. F. Sharp, May 21st; A. G. Marks, F. E. Thomson, Aug. 1st; K. W. Dunmore, Aug. 9th; A. G. Dickinson, Aug. 29th; S. Hodges, Oct. 24th; A. H. Ramage, Oct. 28th; C. M. Sherlock, A. McL. Blain, Oct. 31st.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—184999 J. L. H. Wright, June 11th; 184910 H. B. Fisk, 184967 L. Ll. Rivas, July 23rd; 184938 G. Kreser, Aug. 8th, 184923 P. A. Herbert, Sept. 1st; G/26662 C. B. Branson, 1581 A. Parsons, 129648 H. H. Small, Oct. 8th.

The following Lts. relinquish their commns. on ceasing to be empld. :—H. Simonis, May 17th; (Hon. Capt.) T. R. G. Marshall (Capt., A.S.C.), Oct. 17th.

Maj. P. R. Grace relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., Nov. 27th.

The following Lts relinquish their commns. on account of ill-health, and are granted the hon. rank of Lts. :—R. L. Bewell, W L. Culverwell (caused by wounds), F. F. Dixon, J. T. Gartside (contracted on active service), C. R. Lee, G. I. D. Marks, H. Orchard (contracted on active service), A. R. Whitten, Nov. 27th.

The following Lts. relinquish their commns. on account of ill-health :—H. F. Evans (Lt., R.H.A., T.F.) (caused by wounds), P. F Heppell (Lt., R.F.A., T.F.) (caused by wounds), N. L. Moon (Lt., Hrs.) (contracted on active service), S. McKercher (Lt., Can. Local Forces), Nov. 27th.

The following relinquish their commns., being physically unsuited for the duties of Pilots or Obsrs. :—Sec. Lt. W. Doyle, Lt L. Jolly, Nov. 27th.

Sec. Lt. G. P. S. Sanday relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Aug. 24th.

Sec. Lt. R. Morton (Sec. Lt., Bord. R.) relinquishes his commn. on account of ill-health, Nov. 27th.

The surname of Lt. (actg. Capt.) G. E. Brookes is as now described, and not as in "Gazette," Oct. 22nd.

The surname of Flt. Cadet H. P Gardner is as now described, and not as in "Gazette," Sept. 3rd

The notification in "Gazette," Nov. 15th, concerning Flt. Cadet B. J. Hill is cancelled.

The notification in "Gazette," Oct. 29th, concerning Flt. Cadet J. A. P Hunt is cancelled.

ADMINISTRATIVE BRANCH.—Lt. (Hon. Capt.) A. E. Miller, M.C., to be actg. Maj. while empld. as Maj., Nov. 3rd.

Capt. J. S. Michie, M.C., to be Capt., from (A.), Aug. 6th (substituted for notification in "Gazette," Aug. 27th

Capts. (T.) to be Capts. :—P. P Capelli, Oct. 28th; H E Earl, Nov. 4th.

A. A. Gawn (Hon. Capt., A.P.D., ret. pay) is granted a temp. commn. as Capt., Oct. 1st (substituted for notification in "Gazette," Oct. 25th.)

Lts. to be actg. Capts. while empld. as Capts. :—F Robinson, June 30th; A. G. Knight, D.S.O., M.C., R. Leake, W J. O. Newton, July 11th; H. C. Vickery, July 27th; A S. H. O'Brien, Oct. 29th

Sec. Lts. (T.) to be actg. Capts. while empld. as Capts.—J. Woolfenden, Oct. 1st; (Hon. Capt.) J. D Fitzgerald, Oct. 29th

The following are granted temp. commns. as Lts., seny. April 1st,—F. C. McBride (Capt., Lond. R., T.F.), and to be Hon. Capt., Sept. 30th; J. Illingworth (temp. Lt., Lanc Fus.), Nov. 9th; B. W. Blower (Lt., Shrops. L.I., T.F.), Nov. 14th.

The following are granted temp commns. as Lts. :—W. Pritchard, M.C. (Hon. Lt. and temp. Qrmr.), Oct. 14th; B. Booth (Lt and Qrmr., Lab. Corps), Nov. 12th.

Lts. (A.) to be Lts. :—(Actg. Capt.) E. E. Hardie, Nov. 6th; C. F. Cowper, Nov. 9th (substituted for notification in "Gazette," Nov. 19th; D. F. Stiven, Nov. 12th; E. L. Heyworth, Nov. 14th; (Hon. Capt.) H. G. Southon, A. Swinglehurst, Nov. 16th.

Lt. M. E. Staples to be Lt., from (K B.), July 13th.

Lts. (O.) to be Lts. :—J. P. Cunninghame, J N. Stennett, Nov. 7th; W. W. Glenn, M.C., Nov. 14th; E. W. Keep, Nov. 16th.

Sec. Lt. H. R Edwards (R.F.A.) is granted a temp. commn. as Sec. Lt., Nov. 15th, seny. from April 1st, and to be actg. Lt. while empld. as Lt.

Sec. Lts. to be actg. Lts. while empld. as Lts. :—W Fell, from (T.), Oct. 1st; J. A. Armstrong, from (T.), Oct. 28th; J G. Le Brun, from (T.), (Hon. Lt.) J. S. Craig, Oct. 31st.

Sec. Lt A. H. Black (late Gen. List, R.F.A., on prob.) is confirmed in his rank as Sec. Lt., June 7th.

C. White is granted a temp. commn. as Sec. Lt., Nov. 14th.

The following relinquish their commns. on ceasing to be empld. :—Lt. L. G. Bacon, April 8th; Capt. C. Perrett, Nov. 14th; Lt. (Hon. Cap.) M. Jubb (Capt., W. Rid. R., T.F.), Nov. 16th

Lt. J. B. Sidebotham (Lt., R.F., T.F.) relinquishes his commn. at his own request, Nov. 27th.

Lt. (actg. Capt.) W. H. T. Collings (Lt., K.R.R.C.) relinquishes his commn. on account of ill-health, Nov. 27th.

Sec. Lt. J. W. Whitehead relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec Lt., Nov. 27th

Sec. Lt. (Hon. Lt.) A. L. G. Young (Lt., Lond. R.) relinquishes his commn. on account of ill-health contracted on active service, Nov. 27th.

Sec. Lt. F. S. Coates resigns his commn., Nov. 27th.

Sec. Lt. L. J. Hurst resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Nov. 27th.

The notifications in "Gazette," May 21st, concerning Lt. (actg. Capt.) H. E. Pooley and Lt. E. Edwards are cancelled.

The notification in "Gazette," Nov. 12th, concerning Lt. (Hon. Capt.) E. F. G. Thomson is cancelled.

Technical Branch.—Capt. J. W. Francis to be actg. Maj., from (A.), Oct. 12th.

Capts. to be actg. Majs. while empld. as Majs. (Gr. B):—C. G. More, Oct. 15th; W. Wade, Nov. 1st.

Sec. Lt. (actg. Capt.) J. I. Thompson retains the actg. rank of Capt. while empld. as Capt. (Grade B), from (Ad.), Nov. 20th.

Lts. to be actg. Capts. while empld. as Capts. (Grade A):—H. N. Chales, Oct. 19th; F. W. Clarke, Nov. 1st; A. L. Hyslop, Nov. 6th.

Sec. Lts. to be actg. Capts. while empld. as Capts. (Grade A):—D. M. Rees, Oct. 30th; (actg. Lt.) B. P. K. Walsh, (actg. Lt.) J. G. Wright, Nov. 1st.

To be actg. Capts. while empld. as Capts. (Grade B):—Sec. Lt. (actg. Lt.) H. J. Skingle, July 9th; Lt. F. Hickman, Oct. 28th; Sec. Lt. J. Sutherland, Oct. 30th.

Lts. to be Lts. (Grade A):—J. V. Kynaston, from (A.), Sept. 24th; M. E. Staples, from (Ad.), Oct. 31st; G. M. Guillon, from (O.), Nov. 1st; Lt. C. M. Kelly to be Lt. (Grade B), from (A.), Oct. 7th; Lt. V. G. Darrington (R.F.A., S.R.) is granted a temp. commn. as Lt., Nov. 5th, seny. April 1st.

Sec. Lts. to be actg. Lts. while empld. as Lts. (Grade A):—A. Bolton, R. T. Saunt, July 9th; W. H. Preston, D.C.M., Aug. 14th; A. V. Boothroyd, Aug. 20th; A. A. Gardner, Oct. 1st; W. H. Dowling, Oct. 20th; J. Driscoll, J. C. Ferguson, J. S. Hilton, from (Ad.), P. G. May, J. G. Peacock, H. Robinson, Nov. 1st.

Sec. Lts. to be actg. Lts. while empld. as Lts. (Grade B):—S. E. White, from (Ad.), Oct. 31st; T. A. Burns (Hon. Lt.) P. M. Greenwood, from (Ad.), F. E. Miles, from (Ad.), Nov. 1st; D. H. Baylis, Nov. 14th; (Hon. Lt.) W. Hardcastle, Nov. 20th.

The following relinquish their commns. on ceasing to be empld.:—Capt. O. G. Wemyss, Oct. 31st; Lt. F. A. Klipsch (Lt., T.F. Res., Gen. List), Nov. 26th.

Capt. W. H. R. Whittet, M.C., relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Nov. 27th.

Lt. (actg. Capt.) F. B. Bayly relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt. Nov. 27th.

Sec. Lt. (Hon. Lt.) T. N. Glover relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Nov. 27th.

Sec. Lt. W. E. Arscott relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Nov. 27th.

The date of appt. of Sec. Lt. (actg. Capt.) E. G. Herbert is Aug. 19th, and not as in "Gazette," Oct. 22nd.

The date of appt. of Sec. Lt. (actg. Lt.) R. J. Wallace is April 29th, and not as in "Gazette," Oct. 22nd.

Medical Branch.—T. D. C. Barry (Lt.-Col., R.A.M.C.) is granted a temp. commn. as Lt.-Col., June 1st, seny. from April 1st.

The following are granted temp. commns. as Lt.-Cols. (Oct. 1st, seny. from April 1st):—H. E. South (Fleet Surg., R.N.); H. J. Hadden (Fleet Surg., R.N.); T. Philip (Lt.-Col., R.A.M.C., T.F.); E. C. Cridland (Fleet Surg., R.N.); E. O. B. Carberry (Fleet Surg., R.N.); N. H. Harris (Fleet Surg., R.N.); G. N. Biggs (Maj., actg. Lt.-Col., R.A.M.C.).

The following are granted temp. commns. as Majs., Oct. 1st, seny. from April 1st:—R. R. Fasson (Staff Surg., R.N.), G. D. Bateman (Staff Surg., R.N.), A. W. Iredell (Staff Surg., R.N.), B. R. Bickford, D.S.O. (Staff Surg., R.N.), C. F. Bainbridge (Staff Surg., R.N.), J. D. Keir (Staff Surg., R.N.), R. H. McGiffen (Staff Surg., R.N.), E. M. W. Hearn (Staff Surg., R.N.), L. L. Greig (Staff Surg., R.N.), E. G. R. Lithgow (Maj., R.A.M.C.), A. H. Hogarth (Maj., R.A.M.C., T.F.), W. G. Mitchell (Maj., R.A.M.C.), A. Fairley (Staff Surg., R.N.).

The following are granted temp. commns. as Capts., Oct. 1st, seny. April 1st:—A. MacLennan (Capt., R.A.M.C, T.F.), H. R. B. Hull (Surg., R.N.), C. J. G. Taylor (Surg., R.N.V.R.), J. M. Kirkness (Capt., R.A.M.C, T.F.), A. E. Panter (Permnt. Surg., R.N.), A. R. Sharrod (Surg., R.N.), W. Darling, M.C. (Capt., R.A.M.C, S.R.), E. P. Punch (Surg., R.N.V.R.), E. J. Boyd (Surg., R.N.), S. Robertson (Surg., R.N.), P. M. Keane (Surg., R.N.), H. G. Sutherland (Surg., R.N.), R. S. Overton (Surg., R.N.), H. W. Scott (Surg., R.N.), R. G. Lyster (Surg., R.N.), J. C. Hall (Capt., R.A.M.C), N. C. Bazett, M.C. (Capt., R.A.M.C, S.R.), W. A. Pocock (Surg., R.N.), H. S. Baker (Capt., R.A.M.C, S.R.), V. A. Playne, D.S.O. (Surg., R.N.), J. Rothwell (Surg., R.N.), H. G. Anderson (Surg., R.N.), R. H. Knowles (Surg., R.N.), A. A. Atkinson (Capt., R.A.M.C, S.R.), F. C. Kempson (Capt., R.A.M.C, T.F.), J. A. Parsons (Capt., R.A.M.C, T.F.), R. E. Bell (Capt., R.A.M.C, S.R.), K. Biggs (Capt., R.A.M.C, S.R.), J. P. N. Casey (Capt., R.A.M.C, T.F.), N. F. Lloyd (Surg., R.N.), R. D. Goldie (Capt., R.A.M.C, S.R.), J. O. Watson (Surg., R.N.), W. H. H. Bennett (Capt., R.A.M.C, T.F.), W. G. Robertson (Surg., R.N.), G. W. Clarke (Capt., R.A.M.C), J. C. H. Allen (Surg., R.N.), J. P. Walker (Surg., R.N.), A. Scott-Turner (Capt., R.A.M.C, T.F.), C. H. Browne (Surg., R.N.), G. H. Latham (Surg., R.N.), J. Allen (Surg., R.N.), V. Magee (Surg., R.N.), I. L. Waddell (Capt., R.A.M.C, S.R.), J. R. Adam (Surg., R.N.), E. Heffernan (Surg., R.N.), A. Leitch (Capt., R.A.M.C, T.F.), G. W. Clark (Capt., R.A.M.C), J. A. Gordon (Surg., R.N.), J. Grimoldby (Surg., R.N.), J. M. Bangay (Surg., R.N.), A. G. Holman (Surg., R.N.), H. H. Gellert (Surg., R.N.), E. D. Granger (Surg., R.N.), F. Roberts (Capt., R.A.M.C), J. P. I. Harty (Capt., R.A.M.C, T.F.), C. C. Fitzgerald, M.C. (Capt., R.A.M.C), H. N. Holt (Capt., R.A.M.C), H. J. Bates (Surg., R.N.), J. Lawson (Capt., R.A.M.C, S.R.), T. C. St. C. Morton (Surg., R.N.), R. M. Dannatt (Surg., R.N.), E. N. H. Gray (Capt., R.A.M.C, S.R.), H. J. Orr-Ewing (Capt., R.A.M.C), D. G. Boddie (Surg., R.N.), M. R. O. Wilson (Surg., R.N.), H. M. S. Turner (Capt., R.A.M.C), J. J. Sinclair (Capt., R.A.M.C), W. H. Payne (Capt., R.A.M.C), J. E. Cox (Capt., R.A.M.C), A. W. Weston (Capt., R.A.M.C), C. Webb (Capt., R.A.M.C, T.F.), H. Y. Riddell (Capt., R.A.M.C), J. T. Thomas (Surg., R.N.), R. J. Hearn (Capt., R.A.M.C), J. R. Russell (Capt., R.A.M.C), E. P. Chennells (Capt., R.A.M.C), A. J. O. Wigmore (Capt., R.A.M.C), J. Duffin (Surg., R.N.), O. H. Gotch (Surg., R.N.), J. Keenan (Capt., R.A.M.C), F. J. P. Saunders (Capt., R.A.M.C, T.F.), C. E. Kindersley (Surg., R.N.), D. Wilson (Capt., R.A.M.C), H. B. Smith (Capt., R.A.M.C), P. W. McKeag (Capt., R.A.M.C), J. J. C. Hamilton (Capt., R.A.M.C, T.F.), A. F. Rook (Capt., R.A.M.C.), F. Irvine (Capt., R.A.M.C), R. L. Roe (Capt., R.A.M.C), P. H. Hadfield (Capt., R.A.M.C), L. G. Davies (Capt., R.A.M.C), H. Harvey (Capt., R.A.M.C), A. J. Davoren (Capt., R.A.M.C), T. S. Rippon (Capt., R.A.M.C), C. Salkeld (Capt., R.A.M.C), O. Gleeson (Capt., R.A.M.C, T.F.), W. R. Kemp (Capt., R.A.M.C, T.F.), N. R. Williamson (Capt., R.A.M.C, T.F.), T. R. F. Kerby (Surg., R.N.), F. H. Bowen (Capt., R.A.M.C), H. W. Pigeon (Capt., R.A.M.C), W. R. Nasmyth (Capt., R.A.M.C), C. P. C. Sargent (Capt., R.A.M.C, T.F.), E. Brown (Capt., R.A.M.C), W. H. Anderson (Capt., R.A.M.C), J. L. Whatley (Capt., R.A.M.C), A. Thompson (Capt., R.A.M.C), A. E. F. F. Huntsman (Capt., R.A.M.C), R. A. G. Elliott (Capt., R.A.M.C), W. F. Walker (Capt., R.A.M.C), R. D. Neagle (Surg., R.A.M.C), E. W. Longden (Capt., R.A.M.C), W. B. Loveless, M.C. (Capt., R.A.M.C), A. E. McCulloch (Capt., R.A.M.C), R. W. Pritchard (Surg., R.N.), H. E. Whittingham (Capt., R.A.M.C), D. Cameron (Capt., R.A.M.C), F. J. Murphy (Capt., R.A.M.C, S.R.), J. E. Cable (Capt., R.A.M.C), H. N. Wright (Capt., R.A.M.C), J. S. Stevenson (Capt., R.A.M.C), L. C. Rivett (Capt., R.A.M.C), T. R. Hunter (Capt., R.A.M.C), E. P. Carmody (Capt., R.A.M.C), F. C. Jobson (Capt., R.A.M.C), T. R. S. Thompson (Surg., R.N.), D. Ranken (Capt., R.A.M.C), I. A. Walker (Capt., R.A.M.C), W. P. Whippell (Capt., R.A.M.C), R. H. Robbins (Capt., R.A.M.C), J. D. Bridger (Capt., R.A.M.C), R. H. Dixon (Capt., R.A.M.C), A. B. Rooke (Capt., R.A.M.C), F. C. Morgan (Capt., R.A.M.C), L. C. M. Wedderburn (Surg., R.N.), A. E. B. Sim (Capt., R.A.M.C), C. Visger (Capt., R.A.M.C), W. M. Jeffreys (Capt., R.A.M.C), L. C. Smith (Capt., R.A.M.C), E. R. Bastard (Capt., R.A.M.C), L. C. Blackstone (Capt., R.A.M.C), G. Lewin (Capt., R.A.M.C), W. A. Simpson (Capt., R.A.M.C), K. B. Aikman (Surg., R.N.), A. W. P. Pirie (Capt., R.A.M.C), A. H. Wade (Capt., R.A.M.C), W. Bannerman (Capt., R.A.M.C), A. B. Lindsay (Capt., R.A.M.C), H. J. Shanley (Capt., R.A.M.C, T.F.), J. J. O'Mullane (Capt., R.A.M.C), J. Gardner (Capt., R.A.M.C), T. E. Regan (Capt., R.A.M.C), E. T. D. Fletcher (Surg., R.N.), C. J. Miner (Capt., R.A.M.C), C. E. Lowe (Capt., R.A.M.C), M. R. Dobson (Capt., R.A.M.C), O. May (Capt., R.A.M.C), M. Hocken (Capt., R.A.M.C), S. H. de G. Pritchard (Capt., R.A.M.C, S.R.), C. Peacock (Capt., R.A.M.C), C. P. Strong (Capt., R.A.M.C), A. H. L. Thomas (Capt., R.A.M.C).

J. D. Cherry is granted a temp. commn. as Capt., Nov. 22nd.

The following are granted temp. comms. as Lts. (Oct. 1st, seny. April 1st):—J. W. Brash (Lt., R.A.M.C, S.R.), J. A. Johnson (Lt., R.A.M.C), P. M. Roberts (Lt., R.A.M.C), C. T. Costello (Lt., R.A.M.C).

The following are granted temp. commns. as Lts.:—J. Prendergast, Nov. 22nd; T. J. X. Canton, Nov. 25th; Medical (Ad.) E. W. Gregory (Capt., R.A.M.C, T.F.) is granted a temp. commn. as Capt., Oct. 1st, seny. April 1st.

Chaplains' Branch.—R. E. V. Hanson (late Chapln. to the Forces, 2nd Cl., A.C.D.) is granted a permanent commn. as Chaplain, with the relative rank of Lt.-Col., and is granted relative rank of Col. whilst empld. as Deputy Chaplain-in-Chief, Nov. 21st.

The following are granted permanent commns. as Chaplains with the relative rank of Maj., and are granted relative rank of Col. whilst empld. as Deputy Chaplains-in-Chief:—H. Marshall (late Chaplain to the Forces, 3rd Cl., A.C.D.), J. R. Walkley (late Chaplain to the Forces, 3rd Cl., and temp. Chaplain to the Forces, 2nd Cl., whilst Deputy Assistant Chaplain-General, A.C.D.), Nov. 21st.

The following are granted temp. commns. as Chaplns. with the relative rank of Capts.:—H. Hole, H. E. Horton, H. E. Ruddy, J. M. Wood-Smith, Nov. 21st; E. J. Martyn-Roberts (late temp. Chapln. to the Forces, 4th Cl., A.C.D.), E. Roberts, J. R. Tower, Nov. 22nd.

Memoranda.—Lt. L. A. Rushbrooke to be actg. Capt. whilst specially empld., Nov. 15th.

Sec. Lt. R. W. Hodges to be hon. Maj.

Sec. Lt. (Hon. Lt.) R. Hodge to be hon. Capt.

The notification in "Gazette," Oct. 29th, concerning Sec. Lt. R. E. F. L. Bristow is cancelled.

War Office, Nov. 29th.

Regular Force.—Establishments.—R.F.C.—Mil. Wing.—Flt. Comdr.—Temp. Sec. Lt. C. W. Warman, D.S.O., M.C., Gen. List, from a Flying Officer, and to be temp. Capt. whilst so empld., Aug. 19th, 1917.

* * *

The following are among the Decorations and Medals awarded by the Allied Powers at various dates to the British Forces for distinguished services rendered during the course of the campaign:—

His Majesty the King has given unrestricted permission in all cases to wear Decorations and Medals in question.

Decoration conferred by the President of the French Republic.

Croix de Guerre.

25862 Air Mech., 1st Cl., Frank Henry Freeman, No. 42 Sqdn., R.F.C. (Twickenham.)

Decoration conferred by His Majesty the King of the Belgians.

Croix de Guerre.

Temp. Sec. Lt. John Arthur Higham, R.F.C.

Air Ministry, Nov. 29th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—

Staff Officers, 1st Cl.—And to retain the actg. rank of Lt.-Col. while so empld.:—Maj. (actg. Lt.-Col.) C. H. Butler, D.S.O., D.S.C., Oct. 8th; Maj. (actg. Lt.-Col.) G. S. Peacock, Nov. 20th.

Staff Officer, 2nd Cl.—Capt. (actg. Maj.) G. A. Sinclair-Hill, and to retain the actg. rank of Maj. while so empld., Nov. 23rd.

Staff Officers, 3rd Cl.—And to be actg. Capts. while so empld. if not already holding that rank:—Sec. Lt. (actg. Lt.) R. V. J. S. Hogan, Nov. 11th; Maj. I. A. S. Cooke, Lt. J. S. Stooke-Vaughan, Nov. 14th.

The following temp. appts. are made:—

Staff Officer, 2nd Cl.—Capt. J. A. Hartcup, and to be actg. Maj. while so empld., Aug. 6th.

Staff Officers, 3rd Cl.—Lt. (actg. Capt.) V. Stranders, and to retain the actg. rank of Capt. while so empld., vice Capt. A. E. Hartley, June 11th (substituted for notification in "Gazette" Oct. 4th); Lt. W. H. Date, and to be actg. Capt. while so empld., vice Lt. (actg. Capt.) I. H. P. McEwen, Oct. 26th.

Staff Officer, 4th Cl. (2nd Gr.).—Lt. H. W. Clayton, Oct. 25th.

Staff Lt., 2nd Cl. (P.).—Lt. W. F. Duff, Aug. 30th.

Flying Branch.—Lt. (actg. Maj.) J. S. Barnes retains the actg. rank of Maj. whilst empld. as Maj. (A. and S.), from (S.O.), June 25th.

Capt. (actg. Maj.) G. E. Hervey, D.S.C., to be Capt. (A.) from (T.), and relinquishes the actg. rank of Maj., Nov. 25th.

Lts. to be actg. Capts. while empld. as Capts. (A.):—W. K. Sutton, Sept. 1st; R. W. Reeve, A. J. G. Styrian, M.C., Oct. 18th; (Hon. Capt.) L. N. Sutherland, Oct. 24th; T. H. French, D.F.C., D. F. Lepraik, Nov. 1st; E. M. Henderson, A. E. Morgan, G. C. O'Donnell, H. E. Sheppard, H. E. Walker, M. C., Nov. 4th.

Lts. (K.B.) to be Lts. (A.):—C. E. Mott, Oct. 3rd; A. S. Anderson, Oct. 31st.

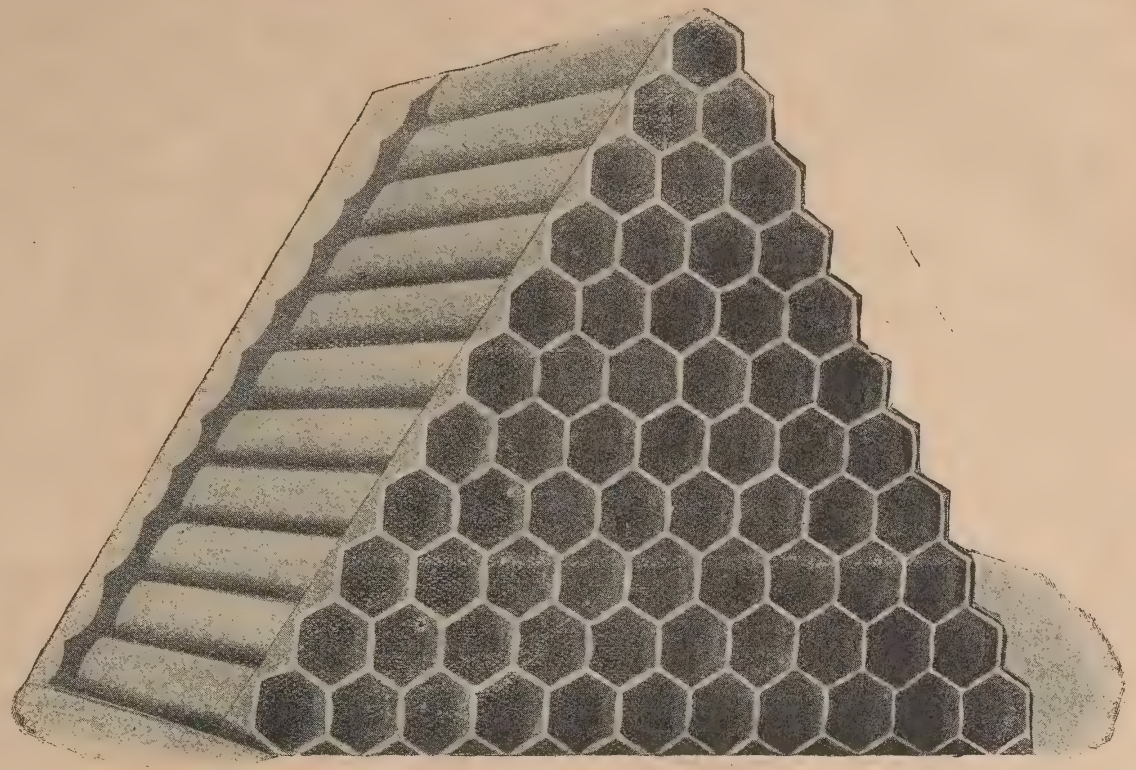
Lts. to be Lts. (A.):—J. Buckley, from (A.), Oct. 4th; W. G. Hastler, from (O.), Oct. 26th; D. P. Farrant, from (K.B.), Oct. 28th; B. J. Blackett (Lt., A.F.C.) is granted a temp. commn. as Lt. (Obsr. Officer), Nov. 1st.

Lts. (Ad.) to be Sec. Lts. (A.), and to be hon. Lts.:—D. F. Anderson, Oct. 23rd; R. W. Ernest, Lord Grimthorpe, Nov. 5th.

The following are granted temp. commns. as Sec. Lts. (A.):—M. B. Lewis (Sec. Lt., Tank Corps), July 7th; W. B. Beale (Lt., E. Kent R., Spec. Res.), and to be Hon. Lt., July 28th; B. E. Randall (temp. Ses. Lt., R. Fus.), July 29th; G. Ibberson (Lt., Bord. R.), and to be Hon. Lt., Aug. 8th; R. Wannell (Sec. Lt., Devon. R., Spec Res.), Aug. 11th; W. H. Norman (Lt., R.F.A.), and to be Hon. Lt., Aug. 13th; C. B. A. C. Chase (Sec. Lt., R.F.A., Spec. Res.), Aug. 14th; H. R. Gunner (temp. Lt., R. Irs. R.), and to be Hon. Lt., Aug. 15th; R. W. C. Glassborrow

(*Continued on page 2127.*)

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THE TREND OF GERMAN AEROPLANE DESIGN.

The following report is published by kind permission of the Technical Department, Ministry of Munitions, to whom the Editor desires to express his thanks.

Performance.

Enemy aeroplanes which have been captured intact or reconstructed have, under test, generally shown themselves poor in performance, judged by British standards, especially in point of speed at heights; but it would seem that as a rule they are fairly good in point of climb, and notably good in regard to manœuvrability. Pilots report them, in the main, comfortable to fly and easy to land, especially the more modern types.

Wing Section.

Scale drawings showing the wing sections employed are included in the detailed reports on the various enemy aeroplanes. In general they do not differ very markedly from British wing sections, though there is a distinct tendency towards rather greater camber. It is thought probable that this principle has been adopted so as to yield better results at high altitudes when the angle of incidence would necessarily be somewhat big.

Practically all German aeroplanes have a pronounced wash-out at the tip of the trailing edge. In the most recent example of Halberstadt design, namely, the C4 type, the lower wings are given a heavy wash-out at their junction with the bottom of the fuselage, the idea being to minimise the surface of discontinuity which would otherwise exist between the bottom surface of the fuselage and the wing roots. Thus the front spar is straight, but the rear edge is markedly concave. This effect exists to such an extent that the trailing spar is considerably bent as well as twisted.

The Fokker wing section is in a class by itself, not only on account of its great depth, but also in having only a very slight camber on the bottom surface. The performance of this machine is, however, by no means despicable, and it is generally conceded to be a redoubtable opponent in spite of the departure from optimum wing section which has been made.

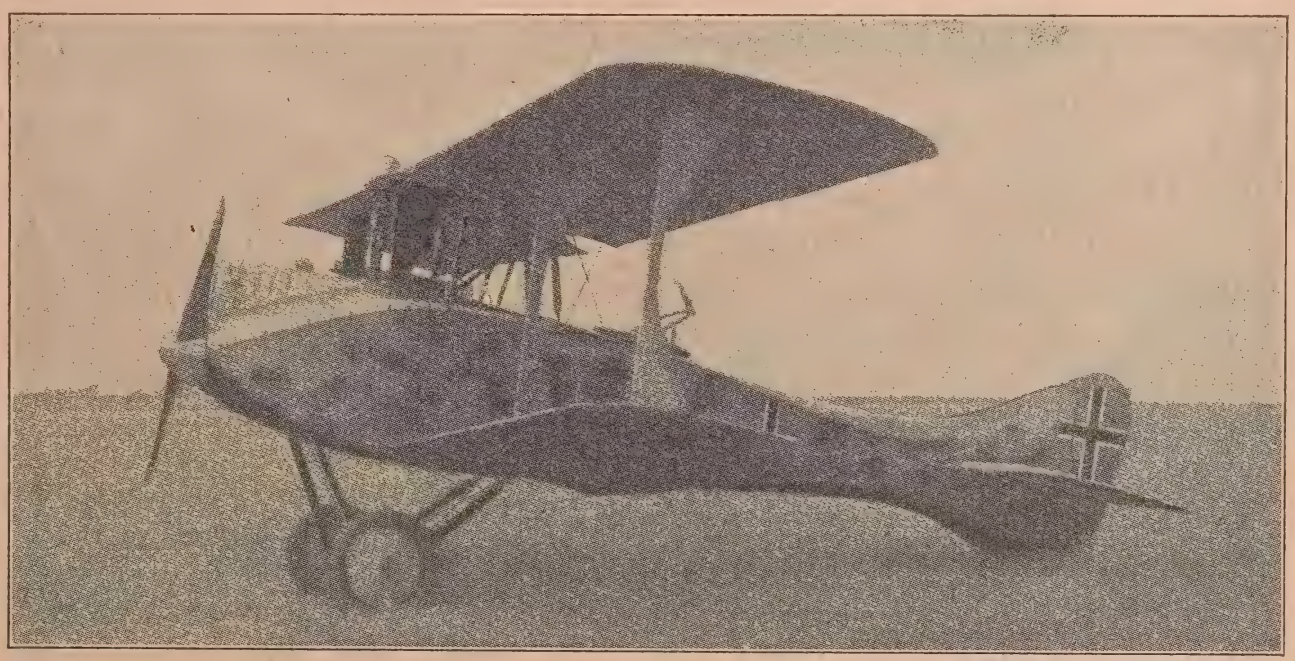
Bays.

As far as single and two-seater machines are concerned, the usual wing construction involves a single pair of struts at each side, but it is noticeable that in the latest model Pfalz scout, the D12, this practice has given place to double pairs of struts. Indications point to great strength having been made a matter of prime importance in this design.

In some types, notably the Pfalz and the Fokker, the upper plane is made as a single unit. In the latter case, the lower plane is also in one piece. In the generality of machines, however, the centre section principle appears to be gaining vogue. Thus, whereas the L.V.G. C5 has a cabane consisting of the usual pyramid of struts, its successor, the C6, is furnished with a centre section embracing a gravity petrol tank and the radiator, both of which are let into the plane flush with its top and bottom surfaces. The Halberstadt and Hannoveraner designs employ the same scheme.

Spars.

Shortage of ash and spruce has led to the general adoption of built-up spars, which are of such a variety of types that a separate report is being issued upon their design. In nearly all cases plywood plays an important part. Thus in the Fokker biplane the spar, which, owing to the absence of the usual wire bracing of the wings, is extremely deep, consists of two thin rails of spruce united by deep plywood webs. In the Gotha bomber a built-up I section spruce spar is covered in with plywood at each side. On the Giant four and five-engined bombers the spars are of hollow rectangular section, strengthened by a transverse web across the



Reproduced from a German print.

The Two-seater "Germania" Fighter, a German Biplane of pleasing lines. The purpose of the "canopy" over the Pilot's seat is not apparent.

middle of the box. The latter is built of numerous components tongued and grooved together. The whole is strengthened by walls of multi-ply glued on each side. In the Halberstadt design the built-up spruce spars are reinforced by broad horizontal webs of plywood running longitudinally, and at each edge of these are stringers. The whole spar construction thus represents a section similar to an H lying on its side, of which the central box spar forms the cross bar.

The A.E.G. machines are alone in employing steel tubular spars.

Other German designs, such as the Pfalz, D.F.W., L.V.G., Rumpler, and Albatros employ built-up spars of the ordinary accepted type, either of box or I section.

Wiring.

With the exception of the Fokker biplane and triplane, which have no external wire bracing whatever in the wings, the rigging of German machines is upon the accepted lines. The standard material is multi-strand cable furnished with whipped and sweated splices at the loops. Quick detachment devices, which at one time were fitted on several German models, have now disappeared. For internal wiring, both plain wire and stranded cable are used. In the Fokker design, the angle of the drag bracing cables between the struts seems to be very bad, but according to reports this machine is actually unusually strong. Drag bracings are in some cases taken from the front of the fuselage, but in most designs are confined to the interior of the wings. In no case is the undercarriage used to form a component of the bracing system.

In most machines the compression struts between the spars, for drag bracing, are steel tubes, but in some cases, notably the Fokker, Halberstadt, and Albatros, wooden box ribs are used for this purpose.

Fuselages.

The standard type of German fuselage construction embodies a three-ply shell built up on light wooden formers. It is generally of the wireless form, but in some cases the forward portion in the neighbourhood of the wings and engine is strengthened with diagonal bracing. This is adopted also in the Gotha in that part of the body which embraces the cockpits and petrol tanks.

Exceptions from this general rule are the A.E.G. two-seater, the A.E.G. bomber, and the Fokker (biplane and triplane). In all of these steel is exclusively used for the fuselage construction, the transverse members being welded to the longerons. In the four and five-engined Giant bombers the rear portion of the fuselage, including the longerons, is of steel tube, whilst in the Friedrichshafen bomber wooden longerons are used in conjunction with steel tube compression members.

In nearly all cases the wooden fuselage is roughly rectangular in section, with corners rounded off, and tapers to a vertical knife-edge at the rear. In the Halberstadt, on the contrary, it tapers, in a manner similar to that of the Bristol Fighter, to a horizontal edge. In the Pfalz designs great pains have been taken to produce a fish-shaped body of perfect streamline form; this is of approximately elliptical section throughout, though leaning towards a sharp "backbone" near the tail. The performance of this design is, however, relatively poor, and the rather elaborate streamlining appears to bring no great material benefits.

In the Albatros and the earlier Pfalz the fin is built in one with the fuselage, and very neatly faired off; but it is notable that in the latest Pfalz this practice has been discarded in favour of a detachable fin.

Tail Surfaces.

The use of fixed fins and tail planes is now standard on all German aeroplanes, and in nearly all cases both the rudder and elevator are balanced. In some cases—notably the Fokker biplane—the fin is offset so as to mitigate the turning effect due to the swirl of the slipstream. In the Hannoveraner fighter a biplane tail is incorporated with a view to reducing the blind area of the movable machine-gun.

In all the big bombers—the Gotha, the Friedrichshafen, and the Giant machines of both types—a biplane tail is now a standard fitting, though it has not yet been adopted on the A.E.G.

In practically all cases the framework of the tail organs is of light steel tube, and in general this applies to the fixed planes as well as to the controllable surfaces. In the Pfalz, Albatros, and L.V.G. designs the fixed plane frames are of wood, and covered with thin plywood.

In some cases—notably the A.E.G. bomber—the fixed planes are of heavily cambered streamline section. The same practice, though to a less noticeable extent, is embodied in the latest Halberstadt; but in the Fokker, which is to be regarded as one of the most up-to-date German types, flat uncambered surfaces are exclusively employed. In this case, too, the fixed tail plane is made in one unit and dropped into brackets on the top side of the fuselage, instead of being constructed in two halves, and placed one on either side. This principle has also been adopted in the most recent Halberstadt.

Controls.

The control gear on German aeroplanes calls for very little comment, being, in all but the large bombers, of the standard universally jointed stick pattern. The arrangement of the rocking shaft varies, being, in some cases, fore and aft, and in others transverse. The rudder bars are almost invariably made of welded sheet steel, and are generally fitted with toe-straps. In recent machines the pilot's seat is frequently adjustable, whereas in earlier designs it was more common to find the leg reach adjustable on the rudder bar. In several cases a locking device is employed, so that the elevator can be fixed at any angle. In the Fokker biplane the control gear is extremely light compared with that of other enemy designs.

Wheel control for the ailerons is only used on the large bombers, such as A.E.G., Gotha, and Friedrichshafen. In the first-named, a dual control for the elevator and rudder is provided, but in the others no form of dual control at all is found. In the Giant aeroplanes double control, operated by two pilots simultaneously, is adopted, as the physical effort called for is beyond the capacity of a single man.

Struts.

Probably owing to a shortage of timber, wooden interplane struts are very little used, and are only found in the Friedrichshafen, L.V.G., and the older type of Pfalz. Steel struts are either tubes of round section faired off with a three-ply or solid wood streamlining, or of oval section, the latter practice being increasingly popular. In some cases the strut ends are tapered and welded to a socket; in others the tube is kept full section, and is dropped over an eyebolt at each end. N struts for the junction of the top plane and the fuselage are common, and are also used between the planes in the Pfalz and Fokker models. Oval steel tubes for undercarriage struts are practically universal, the L.V.G. being the only design incorporating wooden members in this position.

Fabric and Dope.

In general, there are two types of fabric found on enemy aeroplanes. They are of similar material, but differ in colouring. That intended for scouts and fighters is camouflaged in the familiar pattern of irregular polygons of light colours, whilst that for bombers is of such dark tones that the shapes of the polygons can scarcely be discerned. In some examples of the Fokker biplane the upper surface of the wings is painted a bright colour, such as red, over the top of the dyed camouflage scheme. The Pfalz was formerly covered with an aluminium dope, but this has now given way to the standard colouring.

The quality of fabric is, in general, good, but in most cases the dope seems to be carelessly applied, and not thoroughly "worked in" to the material, from which it readily peels off.

The bodies of aeroplanes are sometimes left natural wood colour, as in the L.V.G.; sometimes, as in the Fokker, painted in two bands of bright colours; but more often covered with a cloudy camouflage effect, consisting of soft, low-toned colours, gradually fading into one another and apparently sprayed on.

Pilot's View.

It would appear that in recent designs the necessity of giving the pilot a good view has received more consideration than in the past. The Fokker, Hannoveraner, and Halberstadt machines are excellent in this respect. The bombers seem also to be good, with the exception of the A.E.G., which is very awkward indeed.

Undercarriage.

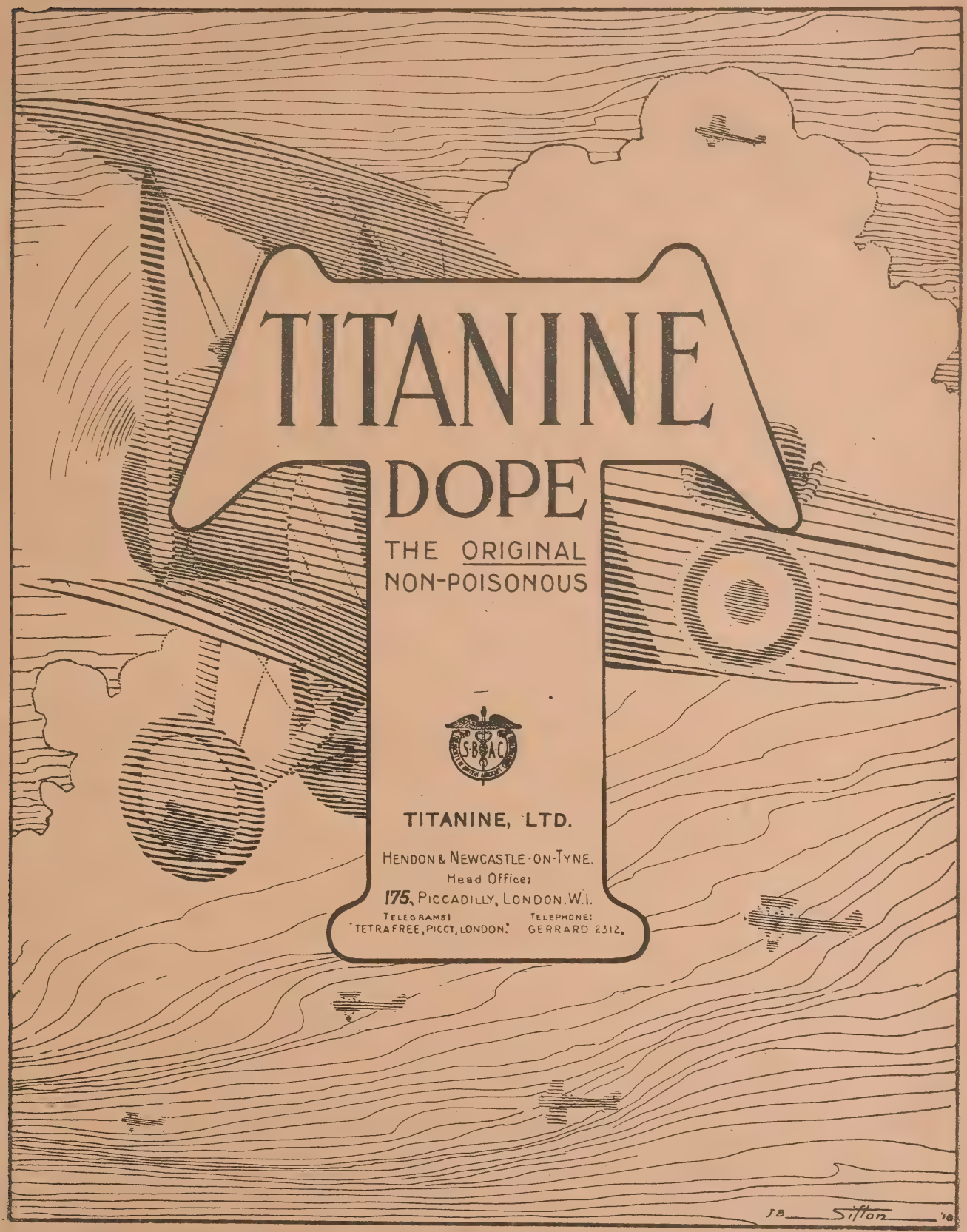
For scouts and two-seaters the plain axle slung to V struts is invariably adopted. In most cases neither the axle nor the tie rod are faired off, but in the Fokker types, both monoplane (sic) and triplane, the axle fairing has been developed into a lifting surface. In the larger bombing machines current practice varies considerably. Thus in the Friedrichshafen there are three two-wheeled axles—one under each engine and the third under the nose of the fuselage. This system has been adopted in some of the Giant aeroplanes. In the Gotha there are two two-wheeled axles under each engine, whilst in the four-engined Giant under each engine unit is a ponderous single axle supporting at each end four wheels placed side by side.

Shock Absorbers.

Rubber bands have now entirely disappeared, and their place has been taken by steel coil springs. In some cases three coils, of alternate "hand," are placed one inside the other; in others, three small coils are grouped together in a "clover leaf" and covered in with cotton fabric. The weight of spring used on the average machine is about 5 lbs. for each wheel. In the Gotha the shock-absorber springs are concealed in the undercarriage struts, and are worked by a cable passing over pulleys. Steel-shod wooden tail skids are almost always used, but are not made steerable.

Engine Bearers.

In most scouts and two-seaters wooden bearers, sometimes of ash, but more often of pine, are supported on multi-plywood bulkheads, but in the Fokker and A.E.G. designs the construction is of steel tubes, to which flat clips are fixed for the support of the crankcase arms. In the A.E.G. bomber the bearers are hollow steel of rectangular section. Owing to shortage of suitable timber, the bearers on the Giant aeroplanes, which are necessarily


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very long, are built up of a soft wood centre piece, reinforced top and bottom with five half-inch layers of ash.

Engine Controls.

On a few machines—notably the Hannoveraner—this is fitted in duplicate, there being, in addition to the usual throttle lever, another controlled by Bowden wire from the control stick. In the multiple-engined bombers separate engine throttle levers for each engine are installed, and in the two-engine type they are so placed as to be operated together when required. The same applies to ignition advance levers, but where Mercédès engines are used the ignition control is coupled up to the throttle.

Radiators.

Several types of radiators are in use on German aeroplanes, and in nearly all cases they are fitted with some simple form of shutter, which is used in conjunction with an electrical rheostat thermometer. Formerly it was the general practice, especially in two-seaters of the D.F.W., Rumpler, A.E.G., and L.V.G. patterns to mount a rectangular radiator in front of the cabane, just underneath the top plane; but in the latest L.V.Gs. this method has been discarded, and a curved radiator sunk flush in the centre section is adopted in its place. Generally speaking, this plane radiator is now standard in two-seater designs, but in the Pfalz, which previously incorporated this scheme, the latest pattern has a nose radiator of vertical tubes, the arrangement being somewhat similar to that of the Fokker biplane; these two machines are in this respect in a class by themselves.

On bombers the usual design embraces a car type radiator at the front end of the engine bearers, but in the four and five-engined Giant machines the use of gear boxes has prevented this practice being adhered to, and in these the radiators are carried well up above the motors, and fixed either on the engine bearer struts or on wires.

In the flush pattern of radiator the tubes are horizontal and of flattened oval section, and are set with their major axis inclined. The tubes are in two cells, which are separated by baffle plates, which ensure that the water runs from side to side, then down, and then from side to side back again. A short-circuit tube is nearly always provided to guard against the formation of air locks in the upper portion of the water tank. Another fitting frequently met with is a small subsidiary water tank mounted above the radiator and connected to the main filler cap with a tube. The top of this tank is fitted with a trumpet-shaped nozzle pointing forward.

Gears.

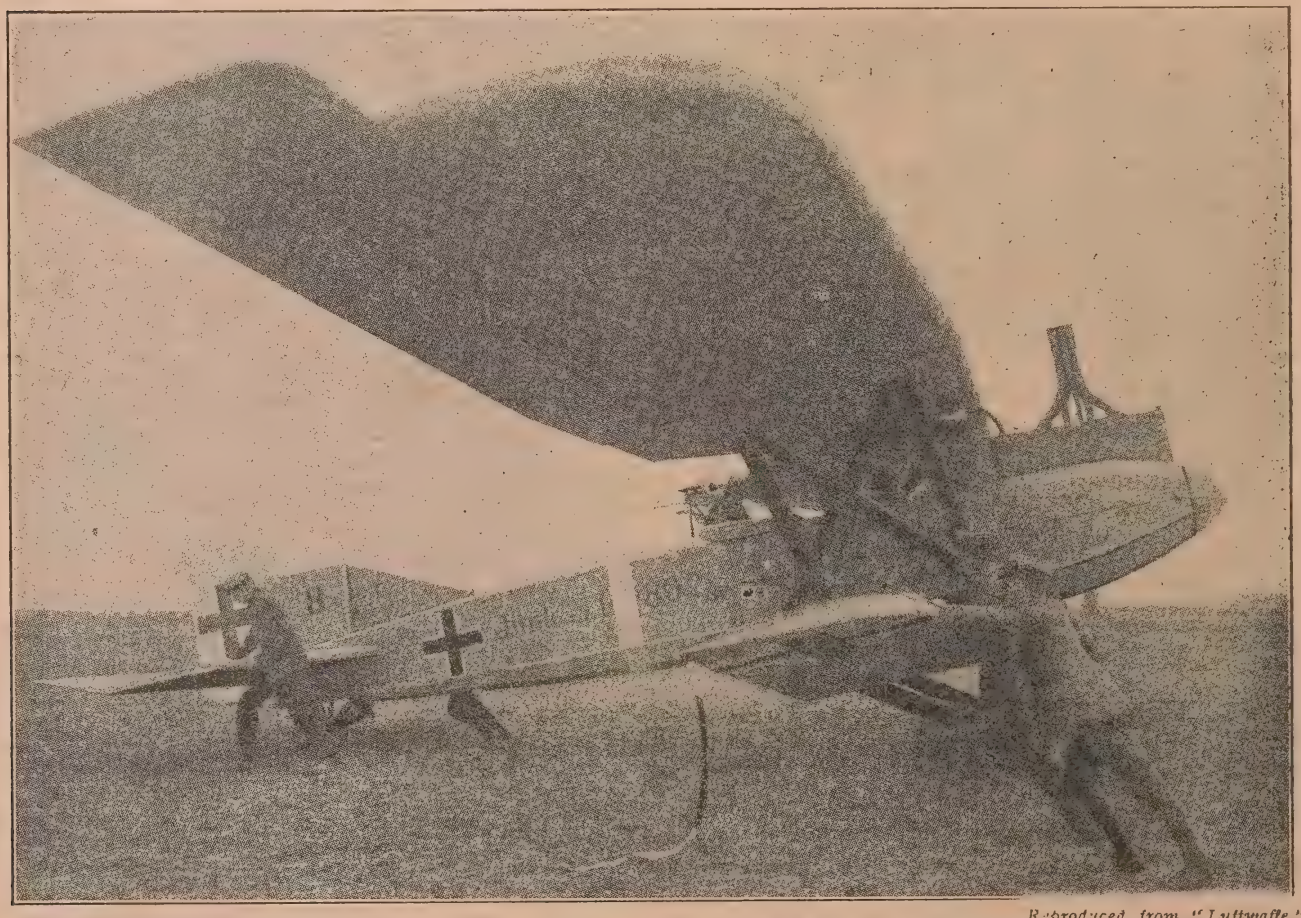
It is significant that in the four and five-engined Giant aeroplanes massive gear boxes are used in conjunction with standard engines of the Mercédès and Maybach type. As might be expected with six-cylinder motors, the gear boxes are very heavy. In the four-engine machines they had shallow casings fitted with cast aluminium cooling fins, and were connected to the engines by flexible couplings and external shafts. In the five-engine design the shafts are enclosed within the gear box. Plain spur pinions are fitted, and the ratio employed both for tractor and pusher screws is 21/41. The gear boxes are of two distinct types—a short one for the tractor screw and a long one for the pusher. The latter is given considerable overhang in order to obviate the need for cutting away a section of the trailing edge to give clearance for the screw. This idea had been adopted both on the Friedrichshafen and Gotha designs, doubtless with some noticeable loss in efficiency.

Each gear box, including the flywheel on the engine which it necessitates, the flexible coupling, and the oil radiator, adds a weight of 346 lbs.—a little over 1.15 lb. per h.p. It is obvious, however, that the gain in propulsive efficiency is considerable.

The oil radiator referred to consists of a semi-circular tank slung under the gear box, and containing 65 tubes of, roughly, 20 mm. diameter. Oil is circulated through this and the sump in the gear box by a pinion pump driven through worm gears and a flexible shaft from the driving pinion shaft of the gear box.

Petrol Systems.

These generally incorporate two tanks—one gravity and one under pressure supplied by an engine pump—except where Benz engines are installed. In this case a petrol pump is employed, which supplies a tubular chamber, from which the overflow returns to the main tank; a hand petrol pump of the semi-rotary type is used for filling the gravity starting tank. The last-named is frequently let flush into the centre section of the upper plane, or is strapped on to it, except in the D.F.W. and Pfalz designs. In the former it is placed on the top of the main tank, and forms the back of the pilot's seat; in the latter it is under the engine cowling. In the Fokker, the main, auxiliary, and oil tanks are incorporated in one unit, and a hand pressure pump is fitted for starting purposes. A small windmill, similar to that on the D.H.9 aeroplane, was found in the wreckage of the five-engined Giant, and it is conjectured that the enemy may have turned his attention to this kind of petrol supply mechanism.



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Propellers.

Owing to the shortage of the best classes of timber, mahogany and walnut are now frequently replaced by ash, pine, sycamore, and maple. The screws of the Giant bombers, being geared down, roughly, 2 to 1, are not very heavily stressed, and are made entirely of soft wood covered with thin veneer, the grain of which runs across the blade.

Wireless.

The majority of German aeroplanes are internally wired for greater wireless capacity, but are only fitted with transmitting apparatus when this is actually going to be used. In some cases the dynamo is driven from a pulley on the engine in conjunction with a hand-controlled clutch, but in modern types it is commoner to find the dynamo supported on one of the undercarriage struts, and driven by a screw in the slip-stream of the tractor. On the five-engined Giant a Douglas type horizontally opposed engine of about 3 h.p. drives the wireless and heating generator.

Armament.

On scouts it is now usual to find two fixed guns firing through the screws and furnished with the usual interrupter gear operated by Bowden wire from the pilot's control stick. On some two-seater machines provision has been made for two fixed guns, but generally only one is fitted. The mountings for the movable observer's gun vary considerably, but in most machines they comprise wooden rings of rather clumsy design. In the Halberstadt it is notable that the gun mounting is erected well above the top of the fuselage, and is streamlined in section as much as possible.

The chief machine designed for offensives against troops in trenches is the armoured A.E.G. two-seater. In this case the pilot has no gun at all, but the observer has three—one movable on a rotating turret, and two fixed weapons firing forward and downward, at an angle of 45 degs. through the floor. It appears that the only other armoured aeroplanes are the Junker and the Albatros, but examples of this type have not been captured.

Bombs.

Small bombs are invariably carried in vertical magazine racks inside the fuselage, and discharged through a trap-door in the floor. The larger bombs are fitted in cradles under the fuselage, and also underneath the wing roots. On the later Gothas an electrical signal device is used to indicate that the bomb has actually left the machine. On these machines the medium-sized bombs appear to be generally released in pairs.

W. G. A.
Ap., D. (L.)
J. G. Weir,
Brig.-Gen.,
Controller, Technical Dept.

TWO IMPORTANT TECHNICAL COMMITTEES.

The Society of British Aircraft Constructors, Ltd., is adding to its sphere of usefulness two very important sub-committees which will deal with technical matters of general interest to the Aircraft Industry.

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It is very satisfactory news that the Society of British Aircraft Constructors, Ltd., is resolved to cater adequately for the technical aspect of aircraft matters.

The Secretary of the Society of British Aircraft Constructors, Ltd., is Mr. Charles V. Allen, and all communications affecting the above-mentioned sub-committees and all other matters concerned with the Society should be addressed to him at No. 1, Albemarle Street, London, W.1.

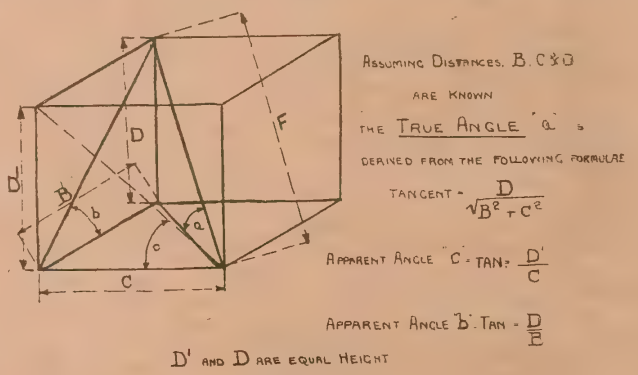
FUTURE AIRCRAFT EXHIBITIONS.

It is announced that future official exhibitions of the Aircraft Industry will be held by and under the auspices of the Society of British Aircraft Constructors, Ltd. One is glad to be able to make this announcement, as it is essential that an organisation which is thoroughly representative of aircraft interests should undertake work of such vital importance.

One imagines that the Council of the S.B.A.C. would be quite willing to adjust matters with the Society of Motor Manufacturers and Traders, which has previously organised aircraft exhibitions at Olympia, but that is not likely so long as the S.M.M. & T. chooses to regard the Aircraft Industry merely as a branch of the Motor Industry.

TRUE AND APPARENT ANGLES.

The following formulæ and diagram have been prepared with a view to facilitating the method of calculating and obtaining the true angles and apparent angles of tubular struts, wiring or like lugs which are not either set in a horizontal or vertical plane. In aircraft construction many of the struts and lugs are set in some diagonal or oblique plane, and to enable the draughtsman to set out the details of construction of these particular components of a machine it is most important that these details should be correctly drawn with the correct angles indicated thereon.



The apparent angles should be shown, to be of help to the setter-up or marker-off and inspectors in the shops, as it is the usual practice to check fittings having lugs with one or more angles on a surface plate. The true angle may be checked by setting up the fitting in its true or level position by the use of a level protractor. By using the following formulæ it is quite easy to find the correct angles.

After the true angle has been obtained the diagonal length "F," indicated in the diagram, can be obtained when distances B and C are known by dividing the square root of B squared plus C squared by the cosine of the angle "A."

By using this latter expression the lengths of bracing wires, tie rods, struts and the like can be readily obtained.

This formulæ has been found to be very useful in practice.

"T. C."

A FOREST PATROL.

The British Columbia Provincial Government has contracted with the Hoffar Motor Boat Co., of Vancouver, for the construction of a flying-boat, which is to be utilised for forest patrol purposes. This is a fulfilment of the decision announced some time back to improve the system of forest protection.

The machine contemplated is to be a two-seater, carrying pilot and observer, with a span of 42 feet, and chord of 5 feet. An engine, developing 100 h.p., will be fitted, and the speed of the machine is estimated at 78 m.p.h., and the climb, 3,000 feet in 10 minutes.

Some two years ago this method of forest protection was the subject of discussion at a gathering of North-west lumbermen at Portland, and the use of aircraft was strongly advocated as being practical, economical and efficient. The principal feature in the employment of aircraft in this capacity is the ability to detect the start of fire, and rapidly get help to prevent it spreading.

The use of a flying-boat is to be commended, because in a heavily afforested area it would be necessary for the pilot to seek a watercourse on which to alight should he experience engine trouble.



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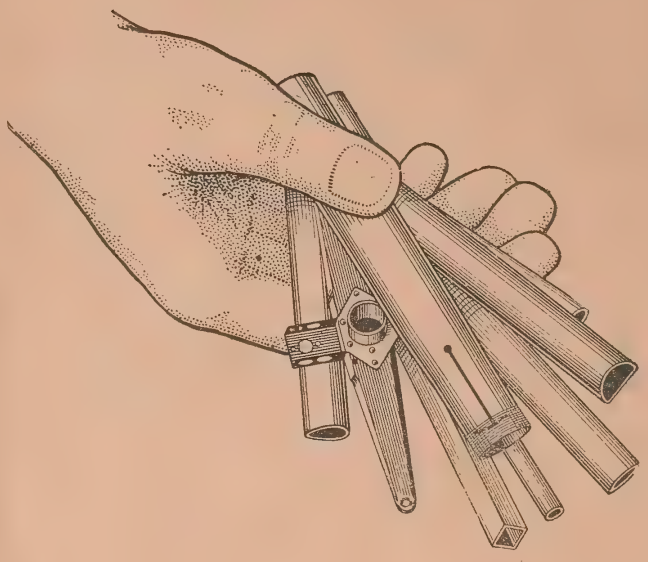
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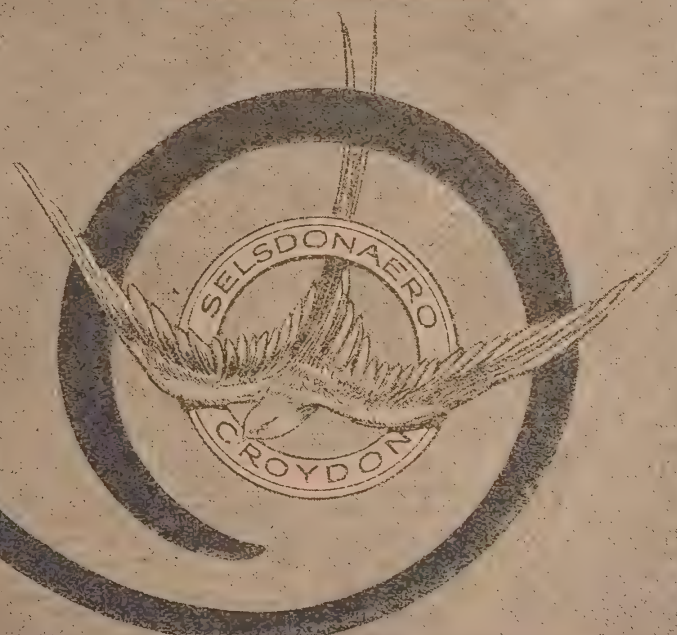
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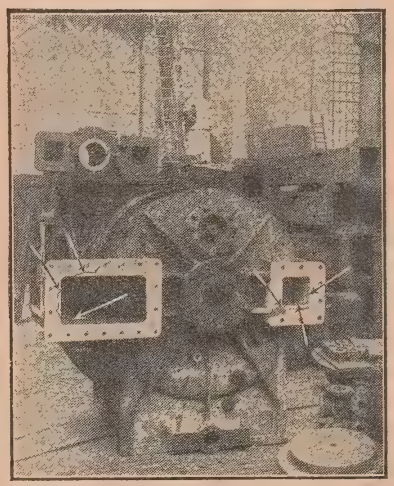
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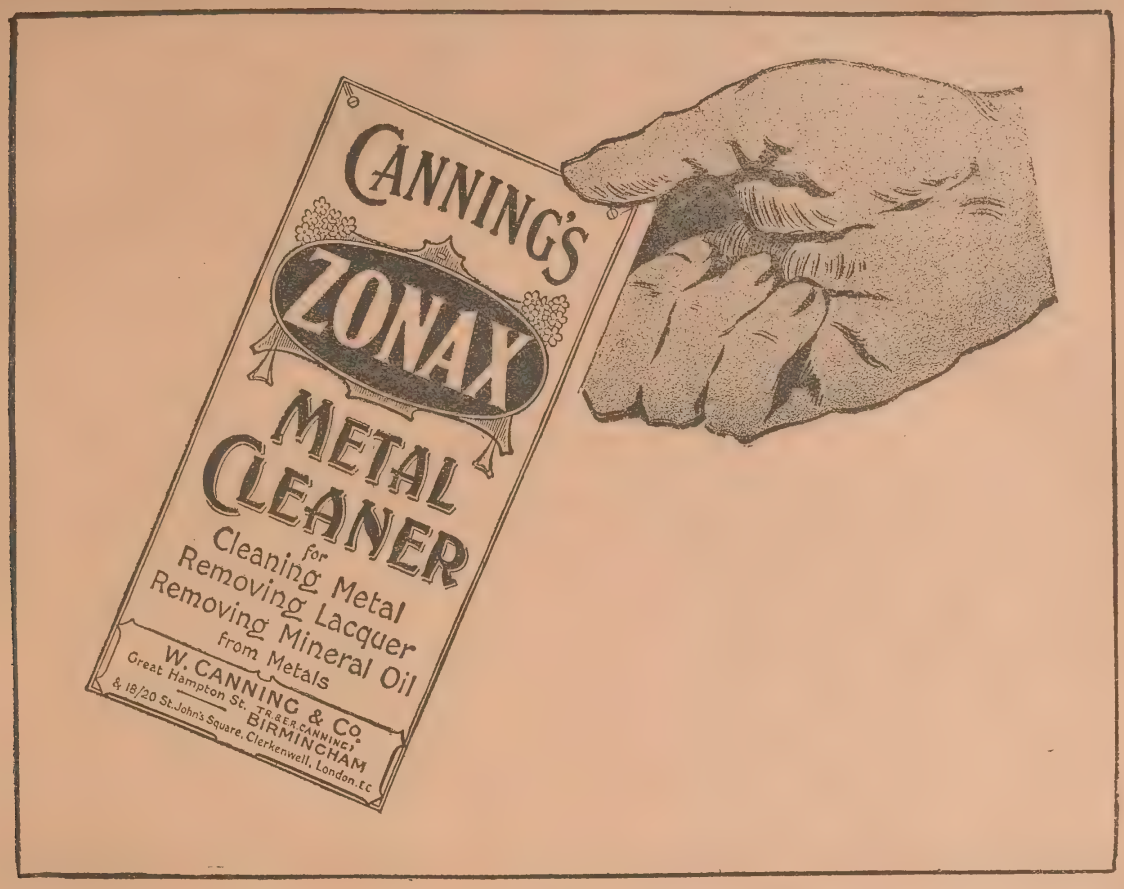
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The Prodger-Isaac Aviation Company. "Aeromnia, 'Piccy, London." Gerrard 278 (2 lines).

Acetylene Welding Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. 'Airmanship, Hyde, London." Kingsbury 220.

Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).

Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.

British & Colonial Aeroplane Co., Ltd. (The Bristol Co.), Filton, Bristol. "Aviation, Bristol." Bristol 3906.

British Caudron Co., Ltd., Broadway, Cricklewood, N.W.2. "Caudroplan, Crickle, London." Hampstead 5551.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 and 4424.

Davidson Aviation Co., Ltd., Hammersmith, W.6. Hammersmith 1992 (3 lines).

Dawson, John, & Co., Ltd., Newcastle-on-Tyne. "Dependable, Newcastle-on-Tyne." Central 2604 (2 lines).

Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.

Glendower Aircraft Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London." Kensington 7605 (3 lines).

Grahame-White Company, Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120. London Office, 12, Regent Street, S.W.1. Regent 2084.

Handley Page, Ltd., 110, Cricklewood Lane, N.W.2. "Hydrophid, Crickle, London." Hampstead 7420

Hooper & Co., Ltd., 54, St. James St., Piccadilly, London, S.W. "Sociable, St. James, London." Regent 912.

Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).

Martinsyde Ltd., Brooklands, Byfleet, "Martinsyde, Weybridge." Woking 331; Byfleet 171.

National Aircraft Manufacturing Co., Ltd., 15, Drummond Crescent, Seymour Street, Euston. Museum 3373.

"Nieuport" & General Aircraft Co., Cricklewood, London, N.W.2. "Nieuscout, Crickle, London." Willesden 2455.

The Regent Carriage Co., Ltd., 126/132, New King's Road, Fulham, S.W.6. "Carbodis, London." Putney 2240-2241.

Roe, A. V., & Co., Ltd., Manchester. "Triplane, Manchester City 8530-8531, Manchester.

Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 193.

Short Bros., Rochester, Eastchurch and Whitehall House, S.W. "Tested, Phone, London." Regent 378.

Sopwith Aviation Co., Ltd., Kingston-on-Thames. "Sopwith, Kingston" Kingston 1988 (8 lines).

Standard Aircraft Manufacturing Co., 28, Bow Common Lane, E. East 2823.

The Supermarine Aviation Works, Ltd., Southampton. "Supermarin." Woolston 37 (2 lines).

Tarrant, W. G., Byfleet, Surrey. "Tarrant, Byfleet." Byfleet 1, 2 & 3.

Thames Aviation Works, 141, Curtain Rd., E.C.2. London Wall 9766.

Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge S.W.3 "Vickerfyta, Knights, London." Kensington 6810.

Waring & Gillow, Ltd., Hammersmith. "Warisen, Ox, London." Museum 5000.

Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.

Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.

Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4. North 2110.

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

Airships—

Airships, Ltd., High Street, Merton. Wimbledon 1314.

Short Bros., Rochester, Eastchurch, and Whitehall House, S.W. "Tested, 'Phone, London." Regent 378.

C. G. Spencer and Sons, Ltd. (see under "Balloons").

Aluminium Castings (Sand and Die)

Coan, R. W., 219, Goswell Road, London, E.C.1. "Krankases, Isling, London." City 3846.

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Balloons

C. G. Spencer and Sons, Ltd., 56A, Highbury Grove, N.5. "Aeronaut, London."

Bent Timber Parts— Dalston 1593.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

The Atlas Bedstead Company, Bilston. "Atlas, Bilston." Phone No. 8 and 51.

Bearings (Etonia Cast Phosphor Bronze)

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blinds—

J. Avery & Co., 81, Gt. Portland Street, London, W. "Velarium, London." Gerrard 6620.

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313.

Rubery, Owen, & Co., Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines).

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670

Casein—

T. M. Duché & Sons, 6, Eastcheap. "Duché, London." Avenue 2096.

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd., Euston Road, N.W.1. "Dunsend, London." North 3405-6.

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Central Aircraft Co., High Road, Kilburn, N.W.6. "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Thompson Bros (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115

Dopes—

Titanine, Ltd., 175, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Beardmore Aero Eng., Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co., Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Belling & Co., Montague Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 248.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 317, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Pirmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich "Aviation, Norwich." Norwich 851

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Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast." Hop 763.
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 718.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 108, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6742.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Metal Parts and Fittings (continued)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1011.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs). Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totteridown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Willesden 2480. Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
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The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

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"The Aeroplane" Buyers' Guide.—*continued.*

Sheet Metal Work (continued)

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Solder Manufacturers—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled Cannon, London." City 6342.

Sparking Plugs—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby." Rugby 235.

Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of K.L.G. Plugs. "Kaelgee, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co, 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—

Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Rubery Owen & Co., Darlaston, South

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Thomas Parsons & Sons, 315 and 377, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S.W.19 "Harland, Wimbledon 45." Wimbledon 45 and 1305.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Watchmakers and Jewellers—

(Silver Models)—

Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9001 (3 lines).

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic London," Vic 4830

Imperial Light, Ltd, 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines)

Welding Repairs—

Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910

The Rotax Motor Accessories Co., Ltd, Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082

Wires and Cables—

Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

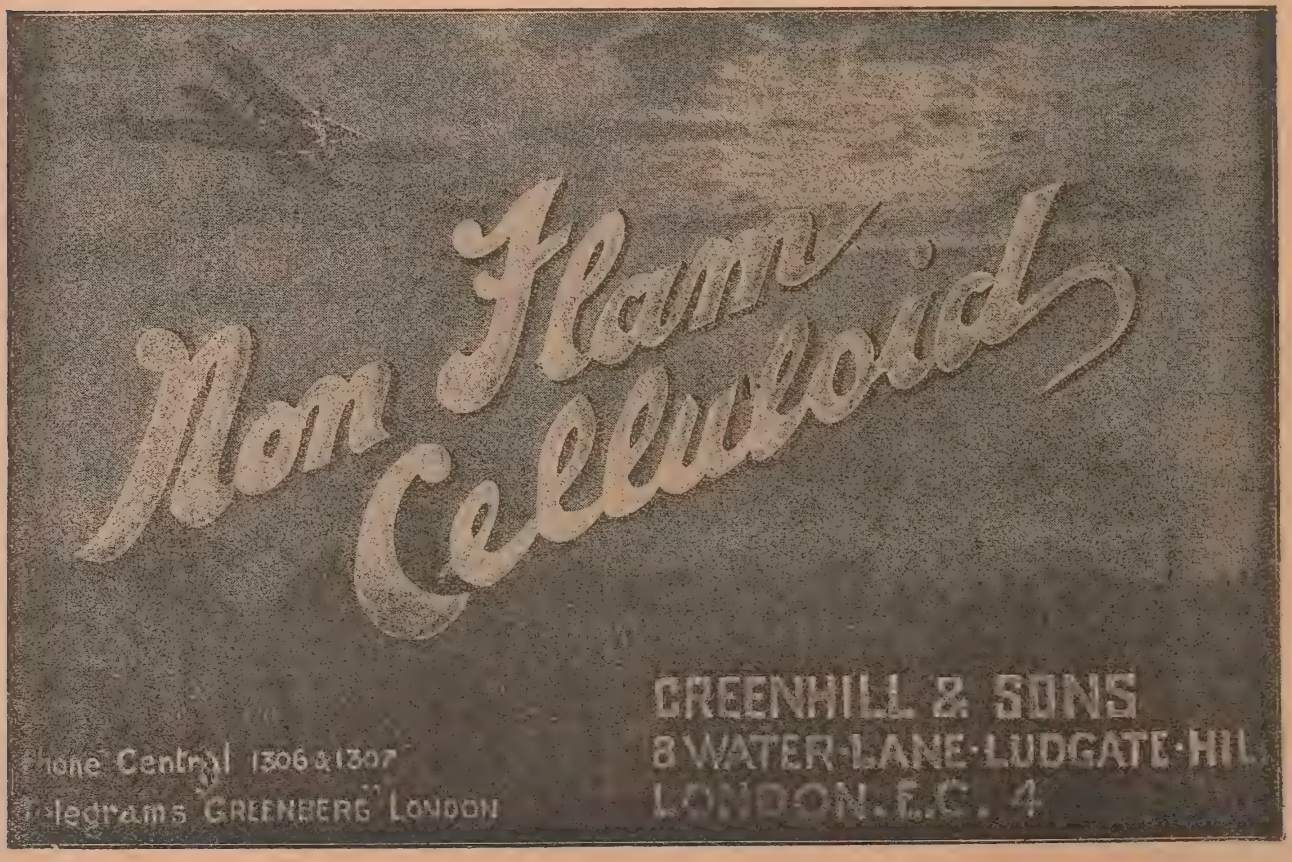
Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale "Robinson, Rochdale." Rochdale 167

Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax" Halifax 136

Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.





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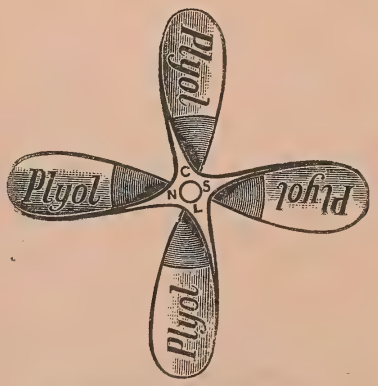
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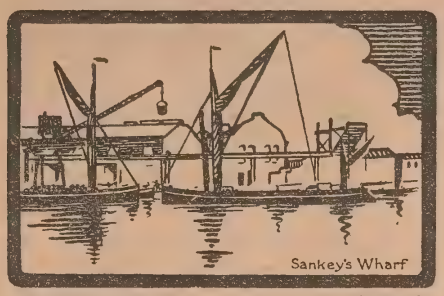
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HIGH WYCOMBE.

THE NAPIER LION.

It is announced that Sir Arthur Duckham, Director—or Controller, one forgets the precise titles of these innumerable *chefs de bureau* in these days—of the Department of Aircraft Production of the Ministry of Munitions has given permission for the publication of the accompanying photograph and some limited particulars of the Napier "Lion" Aero Engine. One is left in doubt as to whether the permission has been given because Sir Arthur Duckham's departmental experts regard the engine as being of no national importance, and therefore an engine which can be freely shown to an imitative world, or whether they regard it as of prime national importance and therefore an engine which must in the national interests be made known to the world so that the world may rush to England to buy it.

In either event the official experts have been made to look extraordinarily foolish—that is, if they can possibly look more extraordinarily foolish than heredity and environment have made them already. The Napier "Lion" has proved itself on test, both on the bench and in the air, to be a very great engine. In the air in a D.H.9 the "Lion" has beaten all that excellent aeroplane's records made with other engines—including the American Liberty, so heavily boomed by our official people, and apparently in the estimate of the Northcliffe Press, the engine which is to revolutionise aviation.

One is under the impression also that a D.H.9, with a series-built "Lion," not a specially faked engine, has beaten all altitude records, though carrying a pilot and passenger and several hundreds of pounds of war load. The story did not come from the Napier Company nor from the Aircraft Manufacturing Company, so perhaps some departmental official will be good enough to verify the facts and publish them as a long-overdue tribute to a firm which has been compelled by official obtuseness to waste most of its time during the war on products which are unworthy of its abilities.

Wasted Opportunity.

The Napier "Lion" engine, which doubtless owes much of its excellence to its designer's skill in avoiding the faults of the other engines which the firm has been compelled to make, has been in its present serviceable state for a year or so. As it is one of the simplest engines in the world to make in detail and to assemble, it might easily have been in production early in 1918, and have been the standard engine on our big bombers and fighters from March onwards.

Thanks, however, to the consistent bad judgment of the official engine experts, the "Lion" was only ordered in minute quantities. Also one is told—again from outside sources—that the firm was forbidden to produce more than a certain small number of engines *per month* although the firm's magnificent workshops were turning out something like ten times as many *per week* of notoriously inferior engines. Under such handicaps as these have our manufacturers had to work and our active-service aviators to fight even to the end of the war.

However, if the official experts regard the "Lion" as not of national importance the firm may take it as a compliment, for on public form one would always rather lay against the said experts' fancy and back their rejects. In fact one can imagine a whole class of post-war goods of the highest class being put on the market and sold with great success chiefly on the strength of their being considered by the official experts as not of national importance during the war.

On the other hand, if the "Lion" was regarded as being of national importance why was it not ordered in quantities? And why was it forced to give way in its own factory to inferior engines? These are matters which need an official explanation.

The Engine Itself.

One hopes some day soon to be allowed to give as full a description of the Napier "Lion" as if it were a German engine—for one is getting a trifle tired of advertising German aeroplanes and engines to an admiring world and one hopes one may soon be permitted to describe such British aircraft as are not of national importance. Meantime, one can give the following brief particulars of the "Lion":—

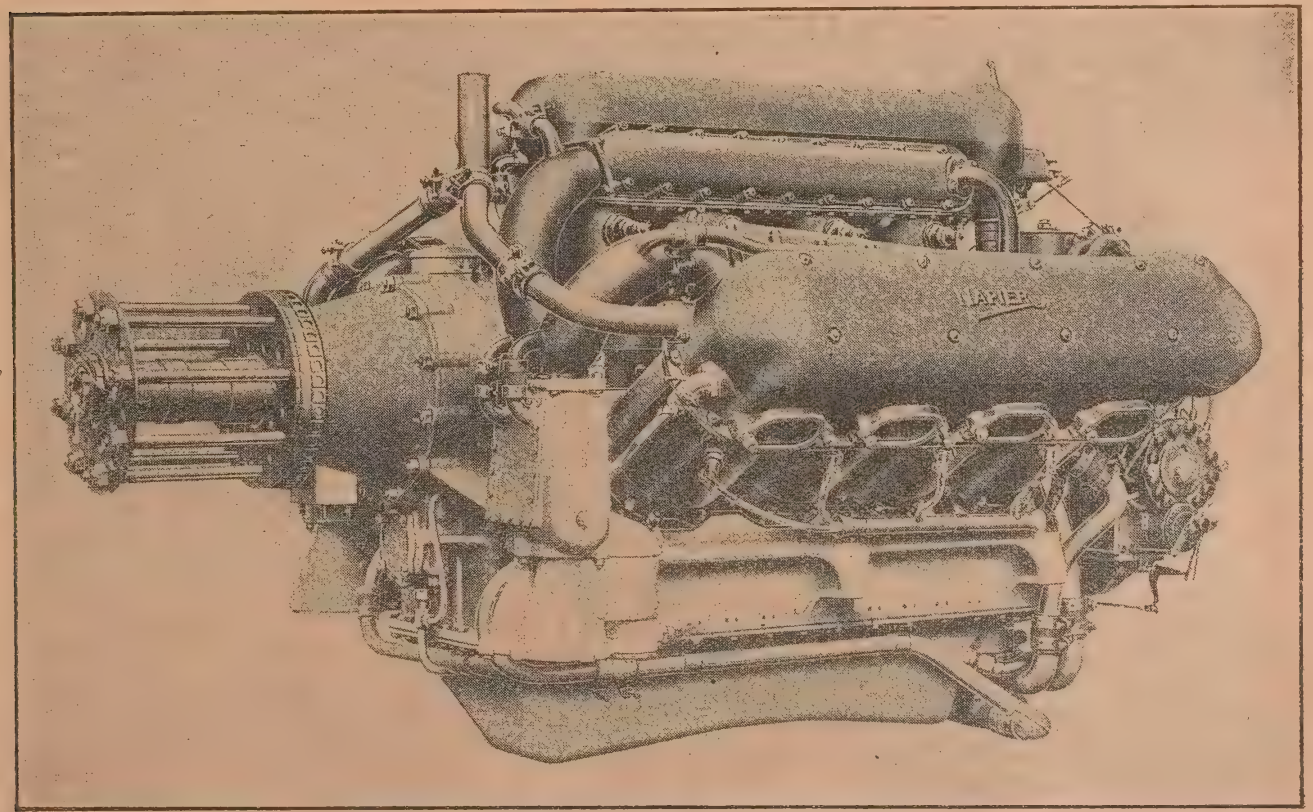
The engine is of the three-row or "Broad-Arrow" type, but, unlike other broad-arrow engines, it has three rows of four cylinders cast in blocks. Thus, it is only a 12-cylinder engine, and is consequently very short and neat when fitted into a machine. Also the four-throw crankshaft on its ball bearings makes a nice light but stiff job, as does the simple spur de-multiplication gear for the airscrew.

Though the bore of thec ylinders is only 5½ inches the power is 450 horse, so there must evidently be high efficiency somewhere, though one is not surprised when one sees the neatness and simplicity of the engine when taken to pieces. Everything looks big and strong and yet somehow there seem singularly few bits and pieces about the engine, so perhaps the power and reliability are obtained by decreasing the number of parts and increasing the strength of those which are left.

The weight of the engine is given as 1.85 lbs. per B.H.P. at normal power, which, one believes is 420 H.P., or so, 450 being presumably the "all-out" power, so the engine is both lighter and more powerful than the Liberty, besides being a very much prettier job either in an aeroplane or out of it, and being shorter than the Liberty it does not increase the difficulties of longitudinal control to the same extent.

One expects great things of the "Lion" in peace-time, although, or rather because, it has been done out of its just due during the war, and its future progress will be watched with interest.

C. G. G.



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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records :—

PATENTS APPLICATIONS.

Aldrich, L. Anti-aircraft sights. No. 18948. Nov. 19th.
Barber, E. L. Copying-machines for shaping screw propellers, etc. No. 19324. Nov. 23rd.
Calthrop, E. R. Parachute launching-devices No. 19265. Nov. 22nd.
Davies, E. I. Release-gear for bomb-carriers. No. 19143. Nov. 21st.
Deeble, F. E. Raising seaplanes or flying-boats from the water. No. 19132. Nov. 21st.
Dempster, R. and J. Ladder for use with gas-holders, etc. No. 18941. Nov. 19th.
Flitcroft, J. Device for lacing aeroplane wings. No. 19184. Nov. 22nd.
Gaff, W. R. Aeroplanes. No. 18901. Nov. 18th.
Geake, W. H. G. Devices for use by aviators, for signalling, etc. No. 19054. Nov. 20th.
Low, A. M. Apparatus for testing aeroplanes. No. 19151. Nov. 21st.
Main, A. Aeroplane construction. No. 19292. Nov. 23rd.
Main, A. Aeroplanes. No. 19293. Nov. 23rd.
Marshall, R. Control of aircraft. No. 19248. Nov. 22nd.
Payze, A. Means for securing parachute on aeroplane, etc., and means for releasing same. No. 18937. Nov. 19th.
Rapp, J. W. Aeroplane rib construction. No. 19249. Nov. 22nd.
Soc. Lorraine des Anciens Etablissements de Dietrich et Cie. Means for fixing screw propeller hubs on their shafts. No. 19330. Nov. 23rd.
Turner, C. Aerial winches. No. 19140. Nov. 21st.
Vickers, Ltd. Variable pitch propellers or airscrews for aircraft. No. 19068. Nov. 20th.
Watts, H. C. Construction of propeller blades. No. 19087. Nov. 20th.
Whitehead, J. A. Floating aerodrome. No. 19057. Nov. 20th.
Willmer, A. W. Fire-extinguisher for aircraft. No. 19335. Nov. 23rd.

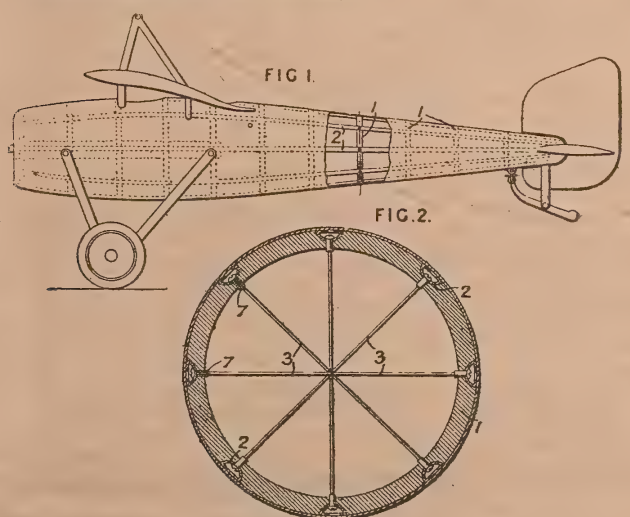
COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER DEC. 12TH, 1918.

120,603. Nov. 8th, 1917. Lord, H. Glands or fairleads and the like used in aerostats or other vessels made to contain gas, air, or any liquid.
120,612. Nov. 12th, 1918. Boxell, S. Propellers for aircraft.
120,627. Nov. 15th, 1917. Chaplin, P. F. Propellers for aircraft.
120,694. March 21st, 1918. Brereton, H. T. Aeroplane inclinometer.
120,701. May 23rd, 1918. British Westinghouse Electric and Manufacturing Co. Structural elements and parts for aeroplanes.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

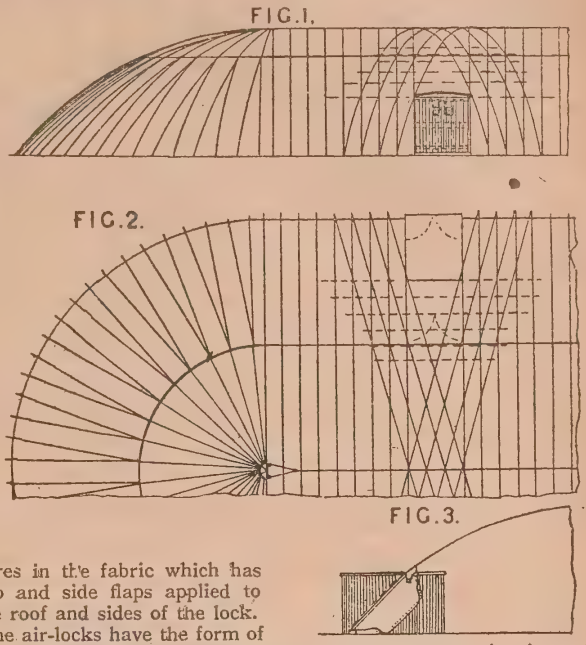
119,336. Aeronautics. MURRAY, J. J., 42nd Street, New York, U.S.A.

FRAMEWORK; CARS AND CABINS.—The bodies of aeroplanes are built up of a number of hoops 1 of wood, aluminium, compressed paper, etc., connected together by longitudinal tubes 2 which are connected by diametrical braces 3 of wire, etc., and screwed nipples 7 passing through the tubes 2 and hoops 1. The longitudinals are set flush with the hoops.



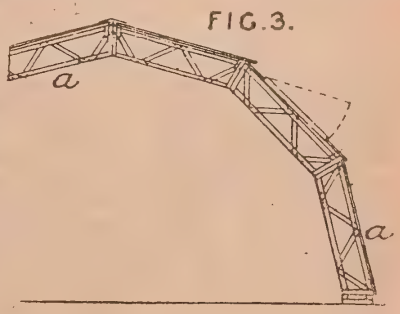
119,339. Tents. LANCHESTER, F. D., 41, Bedford Square, London.

A dome or combination of an arched body with dome ends, Figs. 1, 2, and 3, is formed of balloon fabric extended under a framing of cords or a net, staked to the ground. The edges of the fabric are sealed against the ground by sandbags and the structure is inflated by air pressure. Access to the interior and exit therefrom are obtained through air locks occupying apertures in the fabric which has top and side flaps applied to the roof and sides of the lock. The air-locks have the form of van bodies provided at each end with double doors opening inwards, and constitute cases in which the fabric and cording are packed for transit. A mode of staking the cords to the ground is shown in Fig. 3.



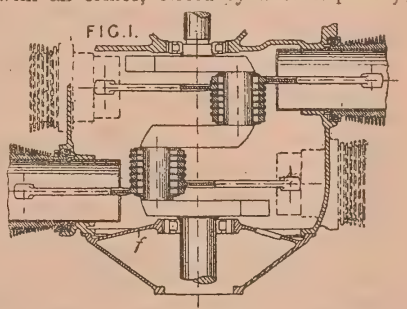
119,347. Portable buildings. REED, E. A., St. Mary's, Manor Road, Goring, Oxfordshire, and BURT, L. S., Salisbury House, London Wall, London.

Relates to a structure composed of arched lattice ribs made up of sections and connected by horizontals. The sections *a* of the ribs are all made alike or in pairs so that they are interchangeable, and when built up tangentially to a circle or ellipse make joints radial to the centre or foci.



119,356. Internal-combustion engines. FEDDEN, A. H. R., and BRAZIL, STRAKER, & Co., Motor Works, Fishponds, Bristol.

COMPRESSION ENGINES; CYLINDERS, LINERS FOR; CRANK CHAMBERS.—In a radial-cylinder engine, the crank casing is cast in one piece and is provided with an orifice, closed by a cover-plate *f*, through which the connecting-rods, after being disconnected from the pistons, can be withdrawn with the crankshaft. An end bearing for the crankshaft is provided in the cover-plate *f*. The crankshaft may be a solid forging; and the cylinders may be disposed in one or more planes. The cylinder liners are secured by flanges and are removed prior to the withdrawal of the crank and the connecting-rods.



THE STANDARD LIGHT CAR.

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COMMERCIAL AERONAUTICS

LONDON TO PARIS.

AN ADDENDUM.

By "Medway."

Within an hour or so of posting my note of comment on Mr. Holt Thomas' London to Paris project, which appeared in The Aeroplane on Nov. 27th, I noticed a report in the Press that the competition, which I had forecasted would soon make its appearance, had already turned up. It is stated that there is another firm in the field which is proposing to take passengers from London to Paris and back for £10 a head.

At the same time, Mr. Holt Thomas, in an article published in the "Evening News," admitted that 15 guineas was a high charge, but maintained that this figure was not fixed with the idea of making huge profits, but simply to secure the experiment against loss and make certain that the undertaking should pay its way.

Personally, my opinion is that the immediate profit on Mr. Holt Thomas' rates should be a very comfortable one indeed, providing that the whole organisation does not have to be a purely temporary one. There are, of course, a number of expenses to be incurred in the nature of capital expenditure. If the demand for tickets were to fall off very quickly, the percentage of the capital expenditure to be allocated against each passenger would be considerable, unless the pleasure service were to be promptly followed by a permanent commercial service of a regular character.

It is quite apparent that this is the intention, but in all probabilities the commercial service may have to face a period of development, during which considerable losses may alternate with considerable profits. The former may predominate for a time, and this is where initial profits made by the pleasure service would be very useful and perhaps essential. If it were possible to guarantee a full load on a regular daily service to Paris over a considerable period of years, the fare of 15 guineas would be absurdly high; but at present the whole thing is more or less speculative, and my personal opinion is, that those who have the pluck to act as pioneers deserve to make a good thing out of it, if their experiment goes well.

Undue Optimism.

I am not in the least surprised, however, to read of the forthcoming competition of £10 a head. The journalist who mentioned this development in the evening paper went further and wrote:—

"It is probable that in a short time flying machines will carry passengers at the same rates as the railway."

This is the sort of nonsense that we all expected to see, and that the writer and others have endeavoured to discount in advance in these columns for months past. All that can be said is, that if aeroplane services start out to carry passengers at ordinary railway fares, the shareholders backing those services will very soon regret the investment. If people talk tall in this way, the uninformed public will be led to support perfectly unsound propositions, and commercial aeronautics will suffer from a terrible slump due to having been misrepresented. There is no need even to aim at carrying passengers at railway fares. We can offer something that is altogether a better proposition provided that we can carry passengers at such a speed that the time saved represents a larger sum of money than the extra fare paid.

I fully expect to hear in a few weeks of somebody offering aerial trips to Paris and back at £5, or even less, and it is imperatively necessary that, before this cut-throat sort of competition gets fairly started, we should have the whole business regularised, and some sort of central control instituted. Directly price-cutting starts, we get encouragement to cut the cost of maintenance, of supervision, and of the salaries paid to pilots. Almost immediately we reach the danger limit. Serious accidents follow, and this leads to a violent revulsion of feeling against aerial transit.

Necessary Control.

My own view is that the Government should take hold and refuse to allow any aeroplane to be used for the carriage of paying passengers except subject to certain regulations and to an adequate system of inspection or something nearly equivalent to it. If the Government does not act, would it be impossible for the Royal Aero Club to put itself into a position of approving services just as the Royal Automobile Club approves motor schools? Such approval would have to be renewable at frequent intervals, and the public would have to be educated by means of propaganda to appreciate the fact that approved services would be safe and well organised, but that, in patronising services not so approved, they would have no one to blame but themselves in the event of serious consequences. Some sort of effective action in this matter requires to be taken absolutely at once.

LOOKING BACK.

By Chevron Or.

It is easy and pleasant to look forward, for we are not tied to facts; at the same time, we can look back with equal ease, and, provided that we observe with attention what we see along the milestones of history, it is far more profitable to look back instead of forward. The man with foresight has, no doubt, his value, but a merely creative brain, unless it bases its creations upon an intelligent understanding of what has gone before, is likely to be thought to be visionary, or even cranky.

Now every financial proposition is more or less of a forecast of conditions and a matter of prophecy, and it would be extremely interesting to investigate the file of propositions placed before one of our great Financial Houses, like Barings or Rothschilds, during the last 100 years, and to see how many in a thousand have turned out to be fundamentally right. The number must be extremely small. This rather indicates that it is a good many "hundreds to one" that any particular prognostication is wrong.

This, I think, is a healthy way to look upon most of the prognostications that now seem so rife with regard to Commercial Flying, which utterances, when added together and divided by the number of statements, so as to obtain an average, work out to the single statement that quite soon flying will become "universal."

Wireless.

To disprove this statement, forecast or prophecy, I will start to retrace my way along the milestones of Engineering and Scientific Development during the last 70 or 80 years, during which period the Flying Machine figures as the youngest of all. The epoch-making invention before this was the discovery and practical application of the principles of Wireless Telegraphy by Marconi.

Even this invention, which became practical nearly 20 years ago, is not universal, except among the Naval and Military Forces of the Great Powers. For ordinary domestic communications it hardly exists, when one considers the world as a whole: and this invention is one, be it noted, that does not entail the risk of life and limb to those making use of it.

Elevators.

Prior to this was the arrival of the Lift or Elevator. I do not know when this was "invented," if such a word can be applied to such an obvious and simple mechanical idea, but I believe it was about 1880 that one began to find it in the new office blocks and hotels built of that period.

How far is the lift universal in London or any other great city? How many thousands of tall houses could one count without ever there being a lift among them all?

Electric Light.

About the same time Electric Light became a practical proposition. Perhaps this development of engineering has made more of an advance than any other in the towns, at all events. Again, let it be noted that both these inventions implied so little risk to the community that their development has not been hindered by questions of life and limb.

Telephones.

The telephone was another new comer about the same time, nearly 40 years ago; also a safe domestic adjunct; not only is it non-universal, but it still remains highly inefficient. There are only 200,000 telephone subscribers in Greater London, to a population of 8 million, that is to say, 2½ per cent. of universality after 40 years' development.

Railways.

The next milestone is our humble railway train, now an old veteran which has been with us some 80 years. It was retarded in its early youth, no doubt, by the risk of personal injury,

nevertheless, though personal risk is no longer taken into account, the railway train, even in this country, is far from being universal.

It is generally considered that Great Britain is provided with a marvellous system of railways, and that there is not a place more than a mile or two from the railway. If one consults a large scale map of Great Britain one can see that there are countless places which are five or even, in some cases, 10 miles from the railway, and in which the farmer's cart still holds sway, though thousands of tons of stuff are taken off the land every year.

I need not go into the causes which have contributed to this state of things, nor into the remedy which, with thousands of miles of light railways shortly coming into the market on the cessation of hostilities, lies at our feet. When we consider the Colonies and certain foreign countries we can hardly find any railways at all.

Now, the foregoing illustrations will, I hope, show what room remains for the development of certain inventions and conveniences that have been known to us for periods varying from 20 to 80 years. Let us turn our attention from these, proved, safe and known developments to the aeroplane.

This invention, which we may as well remember is not a commercial apparatus at all but an engine of war, and has had a useful life of about five years at the most, is the one which is very shortly going to become "universal." Though I am an advocate of the Flying Machine, I count myself among those who hold moderate views, not by any means a pessimist or obstructionist, and this is what I feel.

Pure Conjecture.

The aeroplane of to-day, as I said before, is no more a commercial vehicle than is the Tank a steam-roller. We do not quite know how much they will cost to build. We know with still less exactitude what they will cost to run. Our ideas as to the cost of the Permanent Way are the merest conjecture, and with them our estimates of track expenditure.

As to personal risk, what can we say, having, on the one hand, only those records which are based upon the performances of highly skilled test pilots provided with a certainty of good or fairly good landing grounds, and, on the other, the official record of casualties to Flying Officers, which figures show about one fatality for every 125,000 miles flown, and, therefore, form an interesting contrast to the fatalities on the Underground Railway for, I think, the year 1913—nil in about 180 million passenger miles. All that we do not know, and we may legitimately suspect that many more lives will be lost in the first 15 or 20 years of peace in commercial flying than have been lost during the last 4½ years of war.

And now what do we know about the Flying Machine as a commercial carrier? Practically nothing of value, though we think, perhaps rightly, that one of these days during the next 15 or 20 years that it will be a very useful means of locomotion.

There is just one thing more which upon searching our hearts we do know, and that is that the men and women of middle age and over will not form the Flying Public for the present. They have a quite natural coolness towards any proposition that has on its face the appearance of being a form of legalised suicide. Even if these estimates of the risk are quite wrong, it will take them a long time to find it out.

Would the Elevator of to-day have attained its mediocre degree of universality if it had been hampered from the outset by the fact that the lives of its passengers depended mainly on the skill and nerve of the Lift-man? I think not. And, similarly, can one apply this argument to the aeroplane?

I have not touched upon the aeroplane as a cargo-carrier, for it seems obvious enough that, if the cost per ton mile will not be less than 1s., for many years to come it will not oust the train and steamer.

Nor have I said anything particularly concerning the carriage of mails—this question is also a very vague one, but it has the redeeming feature that the mails, not being human, will not be deterred by the instinct of self-preservation.

In fact, the universal use of the flying machine, when it comes in about the year 2018 will be the result chiefly of our experience in the transportation of inanimate bodies, and not by the creation of them.

Who is to Pay?

No progress can be made without experiment, and no experiment can be made without money, but this money should not come out of the pockets of the investing public, who are always ready enough to walk into any alluring proposition if signs of a Boom are discernible in the financial offing. The only persons to carry out these experiments are the State and the great Financing Houses, who, from their wealth, can buy the experience during long years of losses.

The commercial aviation pulse is beating too fast to be healthy, and at any sign of infection a gargle made up of the foregoing facts should be taken to prevent what otherwise might become a serious epidemic.

When one hears that the Atlantic is to be flown regularly as a commercial proposition, run on a schedule to be rigidly maintained, when one hears of floating harbours to be moored or stationed in the North Atlantic, one should consult the Casualty and Weather Statistics for that ocean, at Lloyd's. When one's told that the Flying Machine will be as safe as a motor-car, and as cheap as a steamer or train, one should keep the purse-strings tight and wait a little while until it is so.

But this does not mean that the investment of money, all we can lay our hands on, in War Loan for the manufacture of warlike materials (and among them aeroplanes) should not be proceeded with: that is quite a different matter, and is no more a commercial operation than the manufacture of hand-grenades or the construction of submarines. These two forms of investment in aircraft should be kept as wide apart as the two poles, and not confused the one with the other.

[One recalls, however, that the bicycle and the motor-car, both of which were merely dangerous instruments of sport within the memory of middle-aged men, and were responsible for heavy casualty lists in their early days, are now, if not actually universal, at any rate popular and cheap methods of transit for animate bodies.—Ed.]

COUNTING ONE'S CHICKENS.

The following letter has been received for publication:—

Sir,—It was rather annoying to read your publication of "Counting One's Chickens before they are Hatched," by "Chevron Or." The point of commercial flying was carried to the ridiculous, absolutely, particularly so when he speaks of the "dust-bins."

Now, would any person wish any such article to be delivered by air, unless absolutely mad? As for the small parcel "stunt," I think it quite probable, but it will only be done in cases where high prices are offered. In this case a large firm will have a machine and pilot handy, and the "bus" will also be used as an aerial taxi for representatives of the firm, who have important duties to perform at an outlying town.

My point is this:—A large firm, with its head offices in London, has some important business to transact in, say, Glasgow or Paris. Wouldn't it be better to send a personal representative, rather than write or wire, and so ensure against mistakes? Particularly when it is considered that, studying comfort, to do this journey by train, and allowing a day for the transaction, it would take quite three days, and very fatiguing ones at that! Whereas, with a decent machine and a pilot who knows the aerodromes en route, the journey could be completed and their representative back in London by evening.

Speaking of the "Factor of Safety" of aeroplanes nowadays, personally I would rather travel by machine, in the air, than some of our present-day cars, with their weak steering gear and crawling speed limits. I may mention that 99 per cent. of the accidents to-day are owing to either carelessness or incompetence.

Take, for instance, an old "Avro" with 100 h.p. Le Rhône. What safer machine is there? And with latest rigging and extra petrol it would make the ideal "bus" for a firm like the one of which I have just spoken—both secure and comfortable. I could mention many other machines quite as safe, but with greater speed, although the "Avro's" 80 m.p.h. should suffice.

But my point is this, with a good pilot, flying is as safe, if not safer, than motoring. Surely, anyone who had contemplated putting money into Commercial Flying, after the war, would have had their enthusiasm somewhat damped, if not completely extinguished, by "Chevron Or" in your issue of Nov. 6th.

I think a large capital will not be needed, as predicted by "Chevron Or," and I hope we shall be assisted and encouraged by both Government and Press, as it will be to their own interests to do. Then we shall need the assistance of a few enthusiasts to start the ball rolling, and probably we shall see even "dust-bins" being delivered by air from London to Edinboro'.

(Signed) "Wings."

[Of course, "Wings" is quite right. He agrees in substance with "Chevron Or," whose article was carefully calculated to place healthy facts before the readers of this paper and to correct the over-enthusiasm of those fanatical recent converts to aviation who seem to think that in the near future the aeroplane is going to defeat all other means of transport, including the goods train and the motor-lorry.—Ed.]

AERIAL MAIL NOTES.

U.S.A.

A Reuter message from Washington, dated Nov. 28th, states that the War Department has released several hundred aeroplanes for the use of the mail service, which is to be extended to all cities in the country.

SPAIN.

A company has been recently formed with the intention of inaugurating an aerial mail system between Madrid, Barcelona, and the Balearic Isles—which is later to be developed into a passenger service. No Government subsidy is desired, but merely the provision of authorised landing grounds, and the permission to stamp mails carried.

CAR NONE THE WORSE AFTER FALLING 60 FEET.

"Sept. 18, 1918.—11-9 A.J. car in the North of Scotland, while rounding a very bad corner, ran over a bank and down it went 60 feet. All the damage was a bent stub axle, and the car is on the road again none the worse."

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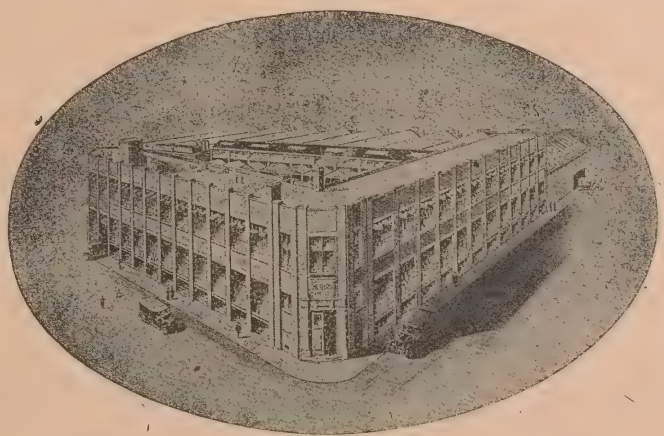
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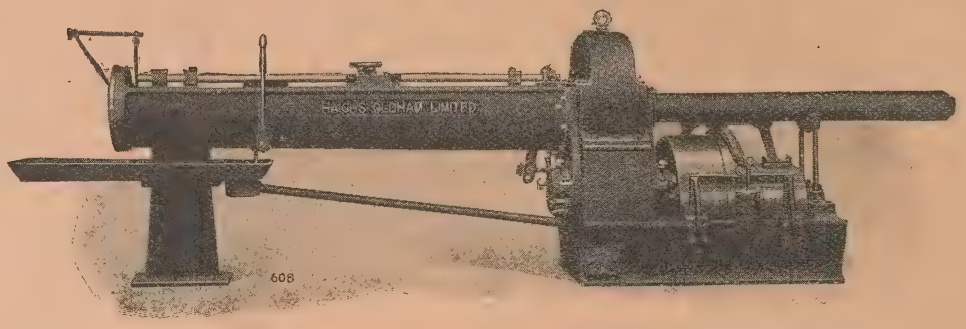
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THE AIRCRAFT TRADER

MARKET TOPICS.

Prices are for Quantities on Usual Terms.

Nov. 28th, 1918.

GENERAL MARKET PROSPECTS.

Although three weeks have passed since the Armistice was signed, no definite Peace programme has yet been outlined by the Air Ministry, and manufacturers are still marking time. Even when the programme of the Air Ministry is known, the firms which have been engaged on Aircraft Construction, and are anxious to return to their pre-war trade at once, will not be able to make any headway until it is known what kind of control (if any) will be exercised.

It has, for instance, been announced that until further notice iron and steel makers are at liberty to accept and execute orders for Iron and Steel ranking below Class B priority subject to the order of priority dated March 8th, 1917.

This apparently means that the same order of priority which was applicable prior to the Armistice will remain in existence for the present, subject to the aforesaid.

One would have expected the whole order to have been changed. In any case, it is more than likely that the Steel output of this country, which has reached colossal proportions, will result in orders of the lowest priority being expected with very little delay.

There is no doubt whatever that a number of firms could immediately change over to their Peace programme if they were only sure that regular supplies of all materials would be available. This latter point is one which should be settled very quickly.

COPPER.—Now the restrictions on Copper have been relaxed there is a possibility of large demands being made for ordinary industrial purposes. It is expected that the demand will even exceed the output figures recently recorded. It is known that very large inquiries for export have already been received. The official price is unchanged, and it is expected that the price will now remain in force until the end of 1918. It may, however, be possible to place orders for 1919 delivery at a lower price.

TIN.—No definite announcement appears to have been made regarding the relaxation of restrictions on Tin, although it is expected that the Allied Tin Executive will shortly discontinue their control of this metal. During the past fourteen days the price of Tin has gradually but consistently declined; some sellers have apparently bought "high" and are anxious to sell, but, unfortunately for them, very few buyers are to be found. It is quite certain that the price has not yet reached its lowest level, as a very marked weakness has set in.

Comparative Prices.

To-day, Nov. 27th	£295	10	0 per ton.
A week ago	£320	0	0 per ton.
Two weeks ago	£327	0	0 per ton.
A month ago	£334	10	0 per ton.
Highest price, 1917	£309	0	0 per ton.
Highest price, 1916	£205	0	0 per ton.

LEAD.—The future of this market is rather obscure; at present the demand is very small. It is, however, expected that the demand for domestic and ordinary industrial purposes will be very large.

Although it was generally agreed that the official price for Lead was low, it came as a great surprise to all concerned to learn on Monday last that the price had been advanced £11 per ton. The price for Pig Lead is now £40 10s.

The alteration has also necessitated an increase in the prices of Lead Sheets, which are now £51 and £52. Other Lead products have also been altered.

STEEL.—The position of this market is not clear. A few large consumers are under the impression that the correct attitude is to carry on as though there were no restrictions, seeing that they are bound to be removed. So far as Aircraft Steels are concerned, a sudden slump has set in, and producers are "waiting," but are not at present "seeing" much. They have large orders for shipbuilding, constructional and railway purposes. They are, however, going slow at present, awaiting developments.

There must be huge stocks of Aircraft Steels available for the firms who will continue to build aeroplanes, the output having reached a colossal figure during the past six months. The official prices are at present unchanged.

TIMBER.—Now that a number of the regulations controlling various materials have been relaxed, the Timber merchants and consumers are anxious to know what steps will be taken to relax the control of Timber supplies. It is understood that the Controller has sent an invitation to the Purchasing Advisory Committee, and the Selection Committee of the Timber Trade Federation and the Merchants Advisory Committee to attend a meeting on Wednesday, Nov. 27th, to discuss the whole Timber question created by the signing of the Armistice, apparently with the object of discussing the measures to adopt with regard to the Timber trade.

It is expected that there will be some measure of control exercised; but, at the same time, it is generally agreed that much more liberty should be given to Timber merchants It is already stated unofficially that the use of permits for the purchase of home-grown Timber will be discontinued. This action will, undoubtedly, be well received by the Timber trades, and would indicate that the Controller is not as anxious, as some merchants imagine, to retain the powers which have been given to him during the War.

Regarding Mahogany and other hardwoods, it was intended to institute a rationing scheme, but although it was understood this had been settled, no announcement has yet been made. It is quite possible that the scheme will be cancelled.

At the same time, there is a possibility of some kind of control being instituted and definite information is anxiously awaited. Very fair supplies of Aircraft Timbers have been received recently, and in the absence of full particulars of possible requirements, it is not possible to state if these supplies will cover future demands. It is more than likely that the prices of Timber will be fixed by the Government, but there should be a reduction made to the prices ruling at present.

FABRIC.—Apparently, the Government have huge stocks of Aeroplane Fabric, and they are, apparently, anxious to cancel orders which are outstanding, but manufacturers, on the other hand, are not anxious to do this until they are able to divert their output to pre-war channels. No intimation has been received as to the extent of the control which is likely to be exercised on Fabric supplies, but in view of the huge stocks which are held, it is expected that the Government will insist on supplying aeroplane constructors with Fabric. Notwithstanding the termination of hostilities prices are still advancing, and it is more than likely that the prices for 1919 will be about 5d. per yard dearer than the price ruling at present. This should not, however, apply to issues from Government stocks, which have been purchased at the present price.

IN AID OF ST. DUNSTAN'S HOSTEL.

Major Gordon Watney's Dramatic Society is to give a performance of Sir Arthur Pinero's play, "Sweet Lavender," at the St. James' Theatre, on December 12th, at 2.30 p.m., in aid of St. Dunstan's Hostel for Blinded Soldiers. Their Majesties the King and Queen have graciously honoured the performance with their patronage.

It will be remembered that the play was first rendered by this caste at the Canteen Theatre of the works of Gordon Watney and Co., Ltd., where the performance was very successful.

* * *

A dance to celebrate victory has been arranged by the joint efforts of the staff of R. W. Coan, Aluminium workers, and the Comptometer Club, which will be held at the Holborn Hall, Gray's Inn Road, on Wednesday, December 11th, and will commence at 6 o'clock.

Admission is by tickets, price 3s. each, which can be obtained from the Hon. Secretaries, Miss Higgins, 219, Goswell Road, London, E.C.1, and Miss Jameson, Comptometer Club, Central House, Finsbury Square, London, E.C.2. All proceeds will be given to benefit the St. Dunstan's Hostel for soldiers blinded in the war.

CELLON CALENDARS.

Many people in the Aircraft Industry have on their desks a combined calendar and scribbling block, presented to them two years ago by Cellon, Ltd. Refills for these calendars for 1919 are now ready, and applications for them should be made to Cellon, Ltd., 22, Cork Street, London, W.1.



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AIRCRAFT FINANCE

CURRENT TOPICS.

Financial Facilities during Reconstruction.

It is known that a Committee is considering the financial aspect of the reconstruction period and what measures, if any, should be formulated to assist industry during the trying times. One awaits these conclusions with bated breath: surely a plan of action ought to have been in operation ere this. Unquestionably the rôle to be played by finance during the transition from war to peace conditions will be very important indeed.

Scope of the American Proposals.

In the meantime a Bill has been introduced in the United States Senate on behalf of the Administration to create a Federal Commission of Reconstruction. This, it is stated, is the Administration reply to the Republican Bill which proposed to create a joint two-party Commission composed of 12 legislators responsible to Congress only. These are the functions of the Commission now proposed:—

1. The financing, regulation, control and development of the merchant marine.

2. The development, financing, expansion and direction of foreign trade.

3. The reorganisation, financing, and readjustment of industries engaged in war work by way of reconverting them to normal production.

Several other functions are enumerated, including industrial research, technical education, the redistribution of labour, and the supply of raw material. It may be that this is purely grandiose verbiage for the purpose of impressing the multitude, but it certainly sounds businesslike and as if serious work was proposed.

Energetic Actions.

Incidentally, the U.S. Government is ruthless in the cancellation of war contracts, £50,000,000 having been stoppeed according to report, while it is stated the export embargo is to be removed from many commodities, and that steel allocation, through the War Industries Board, will be discontinued at the end of the year. It may interest many to know that some big financing schemes are contemplated by the Studebaker Co. and the General Motors Co.

Firmness of Aircraft Shares.

There is an increasing number of people who recognise that by converting swords into ploughshares many companies that have concentrated their energies on aircraft and the like may not have an unhappy or even lean time during transition and after. This point of view has been enunciated herein more than once. The result is reflected in a better share market: there is less inclination to sell shares and a disposition to pick up those at a low valuation viewed from pure merit.

Spreading Investments.

This is a good sign. All the same, those investors possessing a proportionately large quantity of such shares would be wisely counselled not to keep too many eggs in one basket. This applies particularly to those investors, and their number is large, who have made a big pile as a result of recognising the merits of aircraft and kindred securities as a war investment. It is always safest to spread one's risks in case of special developments.

Dope Profits.

By the way, the Usines du Rhône, that important French undertaking mentioned often in the "Dope" affair, reported a profit of only six million francs last year, in comparison with eleven million in 1916. This substantial reduction was due to the increased war-tax of 80 per cent. against 60 per cent., and to a curtailment of 20 per cent. in the business.

Select Committee and Aviation.

"In view of the improbability of aerial transport being available upon any considerable scale for many years to come for the internal transport of passengers and goods, the Committee has made no inquiries in regard to it." These are the remarks of the Select Committee appointed to investigate transport facilities of the country, and it is singular that this pronouncement should synchronise with the adumbration of ambitious development programmes by two aircraft leaders.

The Peculiar Coincidences.

Thus, Mr. Holt Thomas outlined the world-wide project contemplated by Aircraft Travel and Transport, Ltd., a venture evidently sponsored by the Aircraft Manufacturing Co. interests, while Mr. J. A. Whitehead contended at a Queen's Hall meeting that aerial transport would be one of the chief factors influencing the social and commercial life of the Empire. After making due allowance for the enthusiasm of youth on the part of those sponsors of a strikingly vigorous new industry, one must confess that the Select Committee is rather harsh in turning down aerial transport so abruptly and conclusively. At the same time, it must be understood that its powers were confined to an investigation of the capabilities of existing facilities not to suggest new ones. Anyway, the conclusions of a Select Committee are not always final and are sometimes indefinite.

No Accounts for Three Years

Fancy being unable to arrive at a modus vivendi in respect of liability for excess profits duty and munitions levy for three financial years to September last! This is the extraordinary experience of the Belsize Motor Co. It must be a tough and intricate proposition confronting those concerned. One may express admiration for the pertinacity seemingly implied by the protracted deadlock; but, at the same time, the fact remains that the shareholders are in the dark as to the real position of the company. Admittedly, the payment of a dividend and bonus of 15 per cent., a repetition of the previous distribution, is a solatium, but does not really afford full compensation. It is time that the question of the liability for the tax and duty had been threshed out to the satisfaction of both parties.

Aircraft Importation Statistics.

In October imports of aeroplanes, airships, balloons and parts thereof amounted to £294,835, in contrast with only £58,086 in 1917, and a modest £952 in 1916. For the first 10 months of present year imports aggregated £5,190,202, against £157,084 during the corresponding period of 1917, and £28,379 in 1916.

What They Imply.

These figures are very illuminating; they testify to the gradual development of the policy which contributed more than anything else towards the downfall of the Hun. Economically, it would have been better had the country been able to dispense altogether with outside help, but it must be confessed that this help was relatively small.

Modest Export Figures.

Exports of aeroplanes, etc., etc., realised £9,166 in October, compared with £73,580 in 1917, and £9,289 in 1916, the total for 10 months being £262,960 in 1918, £552,209 in 1917, and £225,848 in 1916.

British Platinum Corporation.

At the statutory meeting of the British Platinum and Gold Corporation, the Chairman said: "Apart from its high commercial value, platinum is a fascinating metal. It is one of the most valuable metals known to science. There is no precious metal in such demand for purposes connected with scientific manufacturing processes, to many of which it is essential both in time of war and peace. Platinum is absolutely necessary and vital to many of the Empire's greatest industries.

Sources of Supply.

"There are in the world only two known sources of platinum in payable quantities—the Urals in Russia and the coastal regions traversed by certain rivers flowing from the western slopes of the Cordilleras or Andes Mountains and their affluents in the Republic of Colombia, the most northern State of South America, where is has long been well known that this metal exists in considerable abundance.

"The Chocó district, in which the corporation is operating, is the chief centre of platinum production in Colombia, and it is here the corporation has secured and controls large and extensive alluvial deposits of exceptional value—that is, in the heart of the richest platinum and gold district—alluvial deposits which should provide scope for the energies of many subsidiary companies.

"Some time previous to the war, 90 per cent. of the world's output of platinum was produced in Russia, the falling off, which was very marked even before the war, being due to the exhaustion of the best known areas in the Urals.

And its Uses.

"What is of real and the greatest importance and a matter you would no doubt wish me to refer to, is the question of the demand for and the market value of platinum in the peaceful era we hope we have now entered. You will be familiar with the pre-war uses. They were for jewellery, dentistry, and the leading-in wires of electric bulb lamps, crucibles, thermo-couples, and, on a small scale at that time, for the contact points of magnetos and the manufacture of fuming sulphuric acid.

"The world's production was then about 300,000 troy ounces—I am giving round figures—and the market price about £9 per ounce. Government action practically put an end to the use of platinum—that is platinum ingots—in jewellery, dentistry, and for other purposes not connected with the war.

"Owing to the war its use in magnetos for the engines of aeroplanes, hydroplanes, tanks, motor-cars, motor-boats, etc., was greatly increased. The increase in the production of fuming sulphuric acid, a basis of high explosives, was also very great. In the manufacture of fuming sulphuric acid platinum is employed as a 'catalyser' or changer, an explanation of which would be rather technical. It will be enough to say that platinum is essential.

"The war having ended, it would seem to follow that the requirement of platinum in the manufacture of fuming sulphuric acid would be considerably reduced, but such is not the case with regard to its use in connection with petrol engines. The commercial aeroplane has scarcely taken its first flight, but it needs no prophet to foretell what is coming. The reliability of engines for aeroplanes, motor-boats, automobiles, etc., is an absolute necessity, and unless the contact points of their ignition systems are made of platinum the engines cannot be depended upon. Certainly, I do not anticipate any calling off in the demand for platinum in that direction—quite the contrary. And there are many new uses."

Whitehead Amenities.

The following communication from Mr. G. Arthur Wingfield, Chairman of the Whitehead Aircraft (1917), Limited, was sent to shareholders: it provides its own comment:—

"The Board have accidentally discovered that Mr. J. A. Whitehead has invited proxies for the meeting (to be held next Monday, Dec. 2nd), in favour of himself and his brother, Major Digby Whitehead. As there was no necessity to trouble the shareholders for proxies, because the only business is the re-election of Directors, I inquired the reason, and was informed by Mr. J. A. Whitehead that he wishes to prevent the re-election of your retiring Directors.

"I am sure every shareholder, when he discovers this, will be disgusted at Mr. J. A. Whitehead's secret attempt to stab two of your Directors in the back in this manner, and will be so good as to return to me the enclosed, which cancels any proxy you have given, and appoints me and all my other co-Directors, with whose approval I am writing you, and who earnestly desire the re-election of the two retiring Directors."

The retiring directors, it may be pointed out, were duly re-elected.

NEW COMPANIES.

Ariel Aeroplanes and Aircraft, Ltd.—Private company. Registered Nov. 28th. Capital £100 in £1 shares. Aircraft manufacturers, electricians, etc. The subscribers (each with one share) are:—J. W. Stocks, 29, Chantry Road, Moseley, Birmingham, general manager; L. E. Parsons, 11, Tenbury Road, King's Heath, Birmingham, cashier. Table "A" mainly applies. Solicitor and secretary (pro tem.):—R. H. Mayhew, 38, Waterloo Street, Birmingham.

Bradbury and Jarvis, Ltd.—Private company. Registered Nov. 26th. Capital £2,000 in £1 shares. To carry on the business of mechanical, electrical, motor and general engineers, tool makers, dealers in engines, aeroplanes, airships, components and accessories, etc. The subscribers (each with one share) are: H. W. Bradbury, 14, Clarendon Road, Wallington, Surrey, engineer; E. H. Jarvis, 41, Bendevon Road, Croydon, Surrey, engineer. The subscribers are to appoint the directors.

Duplex Engines, Ltd.—Private company. Registered Nov. 19th. Capital, £5,000 in £1 shares. Cycle, motor, aircraft and general engineers, etc. The subscribers (each with one share) are:—T. A. N. Leadbetter, Hill Top Cottage, Hale, Cheshire, engineer and director; A. L. Knox-Gilchrist, The Croft, East Beach, Lytham, engineer and director. The first directors are:—T. A. N. Leadbetter and A. L. Knox-Gilchrist. Registered office: 68, Bridge Street, Manchester.

"Flexibles," Ltd.—Private company. Registered Nov. 27th. Capital £180,000 in £1 shares. Manufacturers of and dealers in suspensions, springs, tyres, wheels, engines, motors, motor-cars, aircraft and fittings, pattern makers, founders, electrical and general engineers, etc. Agreement with E. B. Killen. The subscribers (each with one share) are:—E. B. Killen, 27, Queen Victoria Street, E.C.4, engineer; S. C. Fraser, 9, Coleherne Rd., S.W.10, solicitor; A. Allistone, 32, Bedford Row, E.C., solicitor; J. K. Kelty, 11, Queen Victoria Street, E.C.4, merchant. First directors:—E. B. Killen and others to be appointed by the subscribers. Solicitors:—Rhys Roberts and Co., 63, Queen Victoria Street, E.C.

Hamaide, Ltd.—Private company. Registered Nov. 27th. Capital, £5,000 in £1 shares (2,500 preference). To take over the business of engineers and metal workers carried on by M. L. Hamaide at Goodmayes, Essex; also to carry on the business of manufacturers of aircraft and component parts thereof, mechanical, electrical and general engineers, etc. The subscribers (each with one ordinary share) are:—R. W. Simmons, 27-8, King William Street, E.C.4, chartered accountant; J. F. Durban, 90, Castlenau, Barnes, S.W.13, law clerk. First directors:—M. L. Hamaide, F. Renders, R. J. Coley, E. L. Maitre Mellows, and T. H. Wurr. Solicitor:—H. Dade, 14, Queen Victoria Street, E.C.

A GAZE INTO THE FUTURE.

Some long time ago a strong-minded lady, who thought I stood in need of the moral rehabilitation which a religious atmosphere alone can confer, took me practically by force to a concert given by the Primitive Methodist fraternity in Clapham or Tooting, or one of those suburbs where everybody lives and is ashamed to own it.

In vain did I feebly explain that, so far from soothing the savage breast of the professional critic, such a performance was calculated to embitter him and remove him utterly from grace. I was impounded and set down in a cane chair with a very baggy seat. There was one item I am not likely to forget, an Infant Phenomenon, with locks like Samson before the fall, a suit of voluptuous purple velveteen, and an enormous lace collar, through which he seemed to be trying to escape backwards. The pulchritudinous one recited the "Battle of Hohenlinden," or something of the kind filched from a Penny Reader, with many intervals for thought, and was rewarded with chaste applause.

The Entrée.

Something of the same shrinking diffidence marked Mr. J. A. Whitehead on the occasion of his concert on Nov. 26th at the Queen's Hall. After the audience had been lulled by Sir Henry Wood and his orchestra by route of "Ave Maria" and the "William Tell" overture into the placid content of a python stodged with pigeons, Mr. Whitehead moved on to the stage, camouflaged behind Lord Cheylesmore. Strangely coy he showed, and with one hand he clung tightly to a rustling sheaf of manuscript. The orchestra assumed an air of public interrogation. Public-spirited stewards closed the doors against those who might be tempted to forget their obligations to Empire and emerge for drinks. After sundry polite suavities by the noble lord, Mr. Whitehead got under way.

Seemingly terrified at first by the sound of his own voice (we had been assured that this was his first essay in public speaking, though this seems doubtful, for he deftly evaded the time-honoured "Unaccustomed as I am——"), he glided into mid-stream. An unsophisticated flapper, who inquired if this was Mr. Howard Carr's musical imitation of a V.C. hero strafing a Zeppelin, was frowned down. Mr. Whitehead drew for us a horrific picture of the future, when the skies should be simply vermiferous with aircraft having Richmond for their origin. He indicated delicately that a place called Whitehead Park would shortly become the commercial hub of the universe. The audience began to sag in its chairs, so the speaker threw in a remark about the Boys of the Bulldog Breed, and what we owed them. No matter how dread the bathos, a decent British audience must rise to this sort of sentiment, so there was a patter of applause. Mr. Whitehead partook of a yellowish liquid in a glass. More applause, this time of a spirited nature.

Cheery Optimism.

Resuming, reading always in oblique fashion from the notes, the speaker predicted that mails that would reach Paris in a matter of two hours, avoiding the tactless mention of all limitations, physical or otherwise, that might apply to aircraft. He opined that we would "beat the Boche in business as we had beaten him in battle," a fine fruity sentiment which was so kindly received that he repeated it at a later stage. In fine, Mr. Whitehead said nothing at some length, with many divagations, and appropriate trimmings of music-hall patriotism.

The concert, which included a quantity of acceptable and popular music, was further graced by the offerings of Miss Carrie Tubb, Miss Auriol Jones, and Messrs. Ben Davies, Ivor Foster, and Herbert Fryer.

Wind-Stick.

AN AIRCRAFT DANCE.

On Friday, Dec. 13th, the London Aircraft Company is holding a fancy dress dance at the Holborn Hall in aid of its Football Fund. It is hoped that a large number of people will attend. The dance commences at 6.30 p.m., and, owing to the entertainment restrictions, finishes at 10.30. Tickets can be obtained, price 2s., from the Secretary of the Sports Club, Mr. L. R. Wood, care of the London Aircraft Co., Urswick Road, Lower Clapton, E.9.

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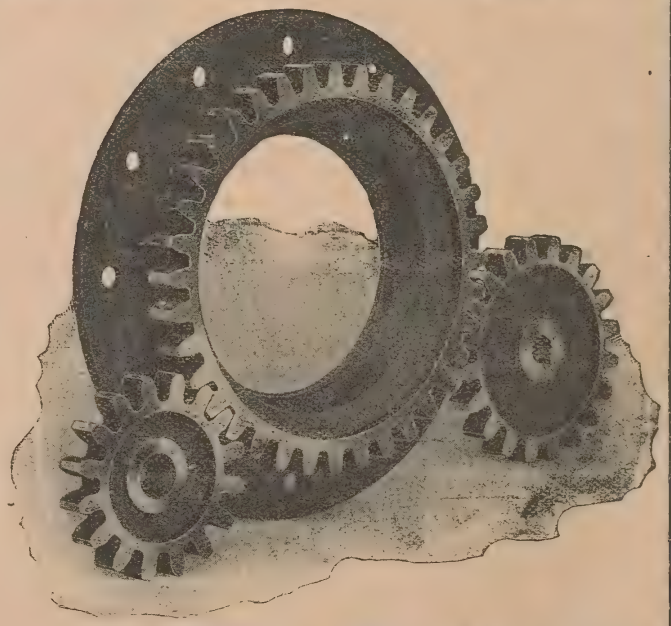
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(*Continued from page 2086*)

(Lt., Sea. Highrs, Spec. Res.), and to be Hon. Lt.; A. H. Day (Sec. Lt., Ches, R., Spec. Res.), Aug. 16th; O. A. Peters (Lt., W. York. R.), and to be Hon. Lt., Aug. 17th; A. L. G. Price (Lt., Som. L.I., T.F.), and to be Hon. Lt.; J. W. H. Lett (Sec. Lt., I.A.R.O.), Aug. 19th; C. B. Percy (Sec. Lt., Wilts. R.), Aug. 21st; F. R. Ashmead (temp. Capt., Glouc. R.), and to be Hon. Capt., Aug. 22nd; J. Martin, M.M. (Sec. Lt., R.F.A., Spec. Res.), Aug. 24th; C. G. K. Pile (temp. Lt., Res. Cav.), and to be Hon. Lt., Aug. 30th; W. J. Jackson (Lt., Rif Brig.), and to be Hon. Lt., Sept. 4th; J. H. Partridge (temp. Capt., Glouc. R.), and to be Hon. Capt., Sept. 7th; G. L. S. Lightfoot (temp Lt., Wilts. R.), and to be Hon. Lt., Sept. 11th; J. L. Hamilton (temp. Lt., New Armies, Gen. List), and to be Hon. Lt., Oct. 19th; H. Symons (Lt., Hert. R., T.F.), and to be Hon. Lt., Oct. 24th; H. A. Crommelin (Sec. Lt., W. Rid. R.), Oct. 25th; C. J. Minister (Lt., York R., T.F.), and to be Hon. Lt., E. S. Willis (temp. Sec. Lt., E. York R.), T. A. Spradbury (Sec. Lt., R. War. R., T.F.), R. Tully (temp. Lt., Lab. Corps), and to be Hon. Lt., P. D. Brookes (Sec. Lt., Lond. R., T.F.), Oct. 26th; R. Turner, M.C. (temp. Lt., York and Lancs R.), and to be Hon. Lt., E. C. H. Jones (Lt., S. Wales Bord.), and to be Hon. Lt., Oct 27th; R. D. Hunnam (Sec. Lt., Gord. Highrs., T.F.), H. S. Colls (Sec Lt., Lond. R., T.F.), C. C. G. Logie (Sec. Lt., Cam. Highrs.), L. D. Wright (Sec. Lt., Middx. R., T.F.), D. Morford (temp. Sec. Lt., Tank Corps), H. S. Fane (Sec. Lt., R., War. R., Spec. Res.), J. Bennie (Sec. Lt., R. Scots, T.F.), W. R. Hutchins (Sec. Lt., R.F.A., Spec. Res.), Oct. 28th; J. G. Towers (temp. Lt., Bedf. R.), and to be Hon. Lt., C. S. Williams (temp. Sec. Lt., S. Staff R.), H. W. Vernon (Lt., R. Fus., T F), and to be Hon. Lt., L. O. Atkins (Lt., E. Surr. R., Spec. Res.), and to be Hon. Lt., C. K. Johnston, M.C., (Lt., Bedf. R., Spec. Res.), and to be Hon. Lt., T. G. Finney (temp. Sec. Lt., Lab. Corps), G. R. Steedman (Sec. Lt., W. York R., Spec Res.), E. W. Handley (temp. Sec. Lt., attd. K.R.R.C.), Oct. 29th; R. L. Coote (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt., P. S. Blowey (Sec. Lt., Dev. R.), A. V. Crebbin (Lt., Notts and Derby R.), Oct. 30th; A. P. Hitchens (temp. Lt., R. E.), and to be Hon. Lt., P. Robertson (Lt., Camn. Highrs., Spec. Res.), and to be Hon. Lt., R. J. Read (temp. Sec. Lt., York L. I.), S. E. Allenby (Sec. Lt., W. York, R.T.F.), C. S. Groves (Lt., A.S.C., T.F., attd. Northd. Fus.), and to be Hon. Lt., W. L. Alderson (temp. Sec. Lt., Ches.R.), J. Stables (Sec. Lt., Gord. Highrs., T.F.), Oct. 31st., F. G. Urmston (Sec. Lt., K. Lpool R., T.F.), L. F. Stevenson (Lt., Quebec R., C.E.F.), and to be Hon Lt., Nov. 1st; W. A. Peggs (Sec. Lt., Notts and Derby R.), W. N. Parkin (Sec. Lt., York and Lancs. R., T.F.), Nov. 5th; M. D. Orr, M.M. (Lt., Nova Scotia R., C.E.F.), and to be Hon. Lt., A. H. Bosher (temp. Sec. Lt., E. Surr R.), R. W. Mitchell (temp. Sec. Lt., Rif. Brig.), F. C. Lyall (Lt., R. Fus.), and to be Hon. Lt., Nov. 6th; F. C. G. Grundy (temp. Sec. Lt., Northd. Fus.), Nov. 7th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—R. M. Walkey, May 13th; E. R. Bradley, May 14th; A. E. Hounson, July 19th; C. E. Mallone, Oct. 25th; G. F. Fountain, R. R. Gilpin, W. R. Wright, Oct. 26th; E. P. A. Topley, G. A. Carver, Oct. 29th; J. Hague, T. H. Heald, H. G. Blass, C. F. Temple, J. F. Newton, Oct. 30th; C. T. Dawson, A. G. Hawkins, Nov. 1st; F. H. Pidgeon, D. P. Smith, Nov. 5th

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—137881 W. A. Raw, Sept. 7th; 29812 S. J. Brickstock, 128177 A. W. McDonald, 154710 J. B. Brown, Oct. 28th; 154904 B. C. Longmire, 152971 J. W. Lavoie, Oct. 29th, 154732 C. A. Hillock, Nov. 1st; 316026 V. N. Merrill, 29111 J. Woods, 950695 F. A. Wray, Nov. 7th; 625760 A. J. M. Tuck, 128801 G. O. Anderson, 110055 J. M. S. Taylor, 26184 T. Eden, 15/58416 H. R. Wolton, 154692 B. R. Brown, 37475 E. A. D. Watmouth, Nov. 8th; 9/22461 H. E. Crook, 13539 R. A. McDowall, 5362204 W. T. R. Flemington, 234019 J. L. White, 154974 T. E. McFeely, 110195 W. T. Gundry, 642629 H. A. Barrett, Nov. 9th; 154611 G. W. French, 105029 A. G. Hatten, 66119 A. Petty, 625727 C. C. Thurrell, 348550 W. O'Dell, 117730 W. J. Offord, 100234 F. H. T. Rudkin, 117160 J. R. Baxter, 9621 A. J. H. G. Taylor, 117183 D. G. Hood, 329873 C. E. O'Grady, 082787 V. L. Cockle, Nov. 10th; 128551 C. F. Arthur, 171256 W. Wilson, 48307 G. W. Perks, 512493 T. J. Mann, 117657 A. S. Evans, 117763 J. R. Astin, 87162 F. A. Beardmore, 23206 G. N. Richmond, 551844 C. H. Main, 107146 H. W. P Carew, 117567 E. H. Redfern, 10230 E. T. Gregory, 3/18386 R. W. L. Pearson, 70997 A. Tibbles, 288147 I. O. Pugh, Nov. 11th; 208165 S. H. Coventry, 87242 A. N. Kelsey, 94787 D. G. Searls, Nov. 12th; 137721 W. A. Barratt, 347685 R. B. Palmer, 54326 L. Kehoe, M2/054678 S. Brown, 170294 D. West, 45864 W. Nightingale, M2/047626 J. Gallacher, 30277 C. R. Cooke, Nov. 13th; 683137 LeR. Mattern, 110208 J. C. S. Calder, 931325 A. K. Gill, 117831 D. B. Thomson, 535427 R. L. Palmer, 137467 T. F. Thorogood, 35533 E. C. Kingston, M2/1021598 F. H. Kay, 110372 W. F. Howett, 37553 H. E. London, 110108 J. R. B Kay, 117360 A. J. Ward, Nov. 14th; 94813 T. F. Davenport, 479910 C. W. Browell, 110344 F. O. Townsend, 146299 P. Robinson, 110565 T. J. Warwick, 100738 E. G. Clarke, Nov. 15th; 117354 P. F. Keevil, 117511 F. G. Stevens, 10/91331 R. Jurgans, 117337 W. A. Westwood, Nov 16th.

To be Sec. Lts. (A.):—Lt. F. E. Bishop, and to be Hon. Lt., from (T.), June 19th; Sec. Lt. (Hon. Lt.) V. J. Copestake, and to be Hon Lt., from (T.), Oct. 14th; Sec. Lt., F. A. Downer, from (T.), Oct. 15th; Lt. W. W. Honywood, M.C., and to be Hon. Lt. from (Admin.), Oct. 28th; Capt. N. S. Senneth, and to be Hon. Capt., from (Admin.), Oct. 29th.

The following are granted temp. commns as Sec Lts. (A.):—H. B. K. Trollope (Lt., S.A. Horse), and to be Hon. Lt., Oct. 14th; G. Granger (temp. Sec. Lt., R.E.), Oct. 15th; C. B. Clark (Lt., E. Ont R., C.E.F.), and to be Hon. Lt., Oct. 16th; G. N. Snowball (temp. Sec. Lt., Northd. Fus.), Oct. 26th; A. W. Craig (Capt., S. A. Forces), and to be Hon. Capt., Oct. 28th; G. W. Watkins (temp. Sec. Lt., Ches. R.), Oct. 29th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—D. F. E. Whitehouse, R. J. Siddell, Oct. 14th; G. R. B. Dixon, Oct. 29th.

Rev. A. C. Rees is granted a temp. commn. as Sec. Lt. (A. and S.), June 27th.

A. E. Hounson (Prob. Flt. Officer, late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (A. and S.), July 19th.

The following are granted temp. commns. as Sec. Lts. (K.B.):—F. Haveland (Sec. Lt., R.G.A.), Aug. 11th; G. E. S. Lamb (Sec. Lt., R.F.A., Spec. Res.), E. F. Murphy (Sec. Lt., R.G.A., Spec. Res.), F. W. Dunnett, M.C. (Sec. Lt., R.F.A., Spec. Res.), Oct. 8th

J. R. Filmer (Lt., R.F.A., T.F.), and to be Hon. Lt., Oct. 20th.

R. C. E. Vernede (Sec. Lt., R.F.A., Spec. Res.), Oct. 21st.

S. Brooke, M.C. (Capt., York and Lanc. R., T.F.), and to be Hon. Capt., Nov. 5th.

Sec. Lt. M. L. Williams to be Obsr. Officer, from (A.), Oct. 8th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (Obsr. Officers):—P. H. Burns, W. A. Owens, April 18th; T. Dootson, April 24th; V. V. Anderson, D. O. Duthie, A. Findley, W. N. Hicks, H. Pritchett, May 12th; T. P. T. Jones, May 20th; C. G. Haigh, J. I Laing, June 6th; R. E. S. Gibson, June 18th; E. M. Boxer, Sept., 6th; J. Ferguson, Sept., 21st (date of first commn., March 9th).

The following are granted temp. commns. as Sec Lts. (Obsr. Officers):—J. E. Kendrick, D.F.C. (temp. Sec. Lt., New Armies, Gen. List), April 7th; G. A. Hunter (Sec. Lt., Dorset R. T.F.), April 18th; F. H. V. Wood (temp. Sec. Lt., attd Middx. R.), May 4th; W. L. Kendrick (temp. Lt., A.O.D.), and to be Hon. Lt., May 8th; H. A. Deakin (Lt., S. Staff. R.), and to be Hon. Lt., May 12th; R. S. Hellier, D.F.C. (temp. Capt., S. Lan. R.), and to be Hon. Capt., May 26th; R. Boyle (Sec. Lt., R.F.A., Spec. Res.), May 27th; A. Smith (temp. Lt., Linc. R.), and to Hon. Lt., F. Ibbotson (temp. Sec. Lt., Notts and Derby R.), June 1st; E. R. Airey (Sec. Lt., W. Rid. R., T.F.), R. J. Baddeley (Lt., Manch. R., T.F.), and to be Hon. Lt., E. Colvill (Sec. Lt., Sco. Rif., T.F.) A. E. Chadwick (Sec. Lt., Durh. L.I., T.F.), E. H. Clarke (temp Lt., Brit.W.I.R.), and to be Hon. Lt., E. E. Richardson, M.M. (temp. Sec. Lt., E. Surr. R.), C. R. A. Wallis (Lt., R.G.A.), and to be Hon. Lt., A. L. Wimshurst (Lt., N. Staff. R., T.F.), and to be Hon. Lt., June 6th; A. H. Mellows (Capt., Hunts. Cyc. Bn., T.F.), and to be Hon Capt., June 21st; S. A. Garratt (temp Sec. Lt., Res. R. of Cav.), June 27th; V. Soper (Lt., Dorset. R., T.F.), and to be Hon. Lt., July 4th; T. A. Tindle (Lt., Wilts. R., T.F.), and to be Hon Lt., July 11th; A. Bentley (temp. Sec. Lt., M.G. Corps), July 15th; T. R. Evans (temp. Lt., Suff. R.), and to be Hon. Lt., Aug. 1st; H. Goodwin (temp. Sec. Lt., S.A. Inf.), Aug. 6th; A. Murray (Sec. Lt., Camn. Highrs.) A. M. Parkes (temp. Lt., Labour Corps), and to be Hon. Lt., R. D. De Pass (Lt., Middx R., T.F.), and to be Hon. Lt., Aug 9th; R. C. Revelle (temp. Sec. Lt., Oxf. and Bucks. L.I.), Aug. 19th; V. R. Husband (Lt., R.F.A.), and to be Hon. Lt., Aug. 21st; H. J. Knudsen (temp. Lt., R. Lan R.), and to be Hon. Lt., Aug. 22nd, F. H. Butler (Lt., Res. Cav. R.), and to be Hon. Lt., Aug. 27th; P. A. Cooper (Lt., Sappers and Miners), and to be Hon. Lt., Aug. 31st; G. H. Phillips (Lt., Can. Eng., C.E.F.), and to be Hon. Lt., J. A. Shepherd, M.C. (Lt., N. Lan. R.), and to be Hon. Lt., Oct. 24th; M. Owen (temp. Sec. Lt., R.W. Kent R.), J. Bevan (temp. Sec. Lt., York R.), V. P. B. Thomas (temp. Sec. Lt., Yorks. L.I.), Oct. 5th; B. M. Storey (temp. Lt., Leic R.) and to be Hon. Lt., H. J. E. Whitfield (temp. Sec. Lt., Durh. L.I.), R. W. Course (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt., R. A. Edminson (Lt., Northd. Fus., T.F.), and to be Hon. Lt., G. A. Gamble, M.C. (Lt., Yorks. L.I.), and to be Hon. Lt., J. B. Hutcheson (Lt., Sask. R., C.E.F.), and to be Hon. Lt., H. G. Sansom (temp. Sec. Lt., Dorset. R.), Oct. 28th; A. T. Barker, M.C. (temp. Sec. Lt., R.E.), Oct. 29th; J. H. E. Biggs (Sec. Lt., K.R.R.C., Spec. Res.), Oct 30th, J. A. L. Brown (Sec. Lt., Notts and Derby R., T.F.), F. S. Tooley, M.C. (temp. Lt., R. Ir. Rif.), and to be Hon. Lt., R. C. Crook, M.C. (Lt., R.F.A., T.F.), and to be Hon. Lt., A. V. Wells (Lt., Notts and Derby R., T.F.), and to be Hon. Lt., H. W. Beck (Capt., N. Staff. R., T.F.) and to be Hon. Capt., J. Tee, M.C. (Sec. Lt., R.F.A., Spec. Res.), D. H. Batty (temp. Sec. Lt., Middx R.), A. W. C. Bayes (Sec. Lt. R.F.A., Spec. Res.), D. H. Cameron (Sec. Lt., High. L.I., T.F.), W. Kidd (Sec. Lt., High. L.I.), R. Langlands (temp. Sec. Lt., Dur. L.I.), V. Limerick (Sec. Lt., R.F.A., T.F.), A. E. Milsham (Sec. Lt., R.W. Kent R., T.F.), A. Hill (temp. Sec. Lt., Army Cyclist Corps), R. D. Poland (Lt., Lond. R., T.F.), and to be Hon. Lt., R. T. Symond, M.C., (Sec. Lt., Lpool R., T.F.), H. Taylor, M.C. (Lt., Lond. R., T.F.), and to be Hon. Lt., R. Wilkinson (temp. Sec. Lt., York. R.), Oct. 31st; A. R. Beveridge (Lt., C. Ont. R., C.E.F.) and to be Hon. Lt., F. Coxen (Lt., R.F.A., and to be Hon. Lt., T. Q. Harvey (Secc. Lt., R.F.A., Spec. Res.), R. R. Layte, M.C. (Capt., Nova Scotia R., C.E.F.), and to be Hon. Capt., C. D. Moorhead (Lt., Manch. R.), and to be Hon. Lt., G. G. Ross-Smith (Lt., R.G.A., Spec. Res.), and to be Hon. Lt., E. P. Whitehead, M.C., (Lt., Manch. R.), and to be Hon. Lt., Nov. 1st; T. G. L. Harris (Sec. Lt., Oxf. and Bucks L.I., T.F.), C. W. Harry (Sec. Lt., Lond. R., T.F.), W. E. Franklin (Sec Lt., Oxf. and Bucks L.I., T.F.), H. Bardsley (Lt., A.S.C., T.F.), and to be Hon. Lt., Nov. 3rd; T. L. Lowe (Sec. Lt., N. Staff. R., T.F.), Nov. 4th; H. K. Pople, M.C. (Sec. Lt., Som. L.I., T.F.), A. A. Campbell (Sec. Lt., R.F.A., Spec. Res.), A. Buckley (temp. Lt., Manch. R.), and to be Hon. Lt., W. G. Millar Sandland (temp. Lt., York. R.), and to be Hon. Lt., W. G. Millar (Sec. Lt., R.F.A., Spec. Res.), R. Bretherton (Sec. Lt., R.G.A., Spec. Res.), P. W. Robinson (Sec. Lt., R.F.A., Spec. Res.), T. L. Gann (Sec. Lt., R.G.A., T.F.), S. G Amor (Sec. Lt., Wilts R., T.F.), A. W. B. Singer (Sec. Lt., Sco. Rif., T.F.), F. C. Morgan (temp. Sec. Lt., attd. Welsh R.), P. G. Allday (Lt., R.F.A., T.F.), and to be Hon. Lt., MacA. Bexon (Sec Lt., R.F.A., T.F.), J. L. Land, M.C. (Sec. Lt., R.F.A., Spec. Res.), A. MacArthur (temp. Sec. Lt., R. Scots), J. K. Pollitt (Sec. Lt., Linc. R., Spec. Res.), Nov. 7th.

The following Prob. Obsr. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (Obsr. Officers):—G. S. Cowie, Oct. 18th; S. L. Hudson, E. S. Marsh, Oct. 25th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—200062 E. E. Baskcombe-Harrison, July 27th; 177770 M. de Verteuil, Aug. 3rd; 305582 G. Cockburn, Sept. 28th; 37704 S. H. Cooper, Oct 30th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (S.):—C. P. Bristow, A. J. Stubbings, June 14th; A. Holden, July 5th; J. W. Bell, Sept. 7th; J. Lomas, Oct. 22nd; J. E. Hughes, E. D. H. Davies, H. V. C. Pennell, C. B. Smith, Oct. 27th; H. St. Clair, Oct. 31st; P. B. Agur, A. C. Meredith, E. H. Brand, Nov 7th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (S.):—T/262458 G. A. Evans, Oct. 14; 316065 J. B. Palmeter, 19759 C. Sagon, Oct. 27th; 120607 P. M. Barr, Nov. 15th.

Capt. W. H. A. Whitworth, M.C. (Capt., Dor. R., T.F.), relinquishes his commn on ceasing to be empld., Nov. 30th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—N. H. Lahaye, A. E. McManus, T. H. Moorwood, R. G. Robertson, D. Welch, Nov. 30th.

Lt. J. H. P. McGarry (Essex R., T.F.) relinquishes his commn. on account of ill-health contracted on active service, Nov. 30th.

The following Lts. relinquish their commns. on account of ill-health, and are granted hon. rank of Lt.:—A. E. Flynn, F. M. Woolner, Nov. 30th.

Lt. E. Greenwood relinquishes his commn., being physically unsuited for duties of Pilot or Obsr., Nov. 30th.

Sec. Lt. J. N. Hamman resigns his commn., and is granted hon. rank of Sec. Lt., Nov. 30th.

Surname of Sec. Lt. V. C. Cordingley is as now described, and not as in "Gazette," Sept. 3rd.

Christian names of Flt. Cadet James William White are as now described, and not as in "Gazette," Sept. 17th

Christian name of Flt. Cadet George Wilkie is as now described, and not as in "Gazette," Oct. 11th.

Notification in "Gazette," Aug. 2nd, concerning Sec. Lt. G. E. Hunt is cancelled.

Notification in "Gazette," Oct. 1st, concerniag Flt. Cadet J. H. Chambers is cancelled.

ADMINISTRATIVE BRANCH.—Lt.-Col. (actg Col.) W. E. S. Burch to be Lt.-Col., and relinquishes actg. rank of Col, Nov. 7th.

Maj. (actg. Lt.-Col.) H. L. Webb to be Maj., and relinquishes actg. rank of Lt.-Col., from (S.O.), Oct. 14th.

Capts. to be actg. Majs. while empld. as Majs.:—(Hon. Maj.) H. R. P. Reynolds, from (S.O.), Oct. 3rd; G. F. Clark, from (S.O.), W. V. Sher-

well, Nov. 18th. Lts. (actg. Capts.) to be actg. Majs. while empld. as Majs. :—W. J. King, from (S.O), D. G. Northam, Nov. 18th.

To be actg. Capts. while empld. as Capts. :—Sec. Lt. A. E. H. Hales, Nov. 5th; Sec. Lt. (Hon. Lt.) A. H. Cabeldu, from (T.), Nov. 9th; Lt. H. W. Tait, from (K.B.), Nov. 16th.

C. J. Casey, M.C. (temp. Capt., Gen. List), is granted a temp. commn. as Capt., Nov. 9th, seny. from April 1st.

E. V. Bashford is granted a temp. commn. as Lt., April 1st (substituted for notification in "Gazette," June 7th.

The following are granted temp. commns. as Lts., with seny. from April 1st, and to be actg. Capts. while empld. as Capts. :—W. E. Cranmer (temp. Lt., Middx R.), May 30th; R. E. Martin (temp. Lt. and Qrmr., Gen. List), Sept. 23rd.

Lts. (A.) to be Lts. :—W. R. Collins, Nov. 7th; V. C. Roberts, Nov. 9th; P. W. L. Jarvis, Nov. 22nd.

Lt. C. J. R. Milton to be Lt., from (K.B.), Oct. 1st.

Lts. (O.) to be Lts. :—G. D. A. Heys, Sept. 11th; E. T. Taylor, Oct. 15th.

H. Wright (temp. Capt., A.S.C.) is granted a temp. commn. as Lt., and to be Hon. Capt., Oct. 21st.

Sec. Lt. A. G. Whittaker to be actg. Lt while empld. as Lt., Oct. 8th.

J. H. E. Weekes is granted a temp. commn. as Sec. Lt., and to be actg. Lt. while specially empld., Nov. 11th (substituted for notification in "Gazette," Nov. 22nd.

The following are granted temp. commns. as Sec. Lts., and to be Sec. Lts. while specially empld. :—W. H. Bowden, F. J Brooks, C. S. Broughton, D. M. Brown, F. J. Hall, A. H. Hasler, F. Hook, A. Kendrick, W. E. Lambert, T. E. Mahoney, S. G. Marsh, F. McKeown, C. M. Oram, R. Pringle H. O. Richards, W. P. Smitton, H S. Snead, W. J. Spooner, H. W. J. Stone, G S. Turner, F. R. Whittaker, J. Wilson, Nov. 15th.

E. J. Cotton is granted a temp. commn. as Sec Lt., Oct. 13th.

The following relinquish their commns. on ceasing to be empld :—Sec. Lt. (Hon. Lt.) C. E. Cox, M.C. (Lt., Middx. R.), Oct. 16th; Capt. I. Davies (Capt., Sher. For., T.F.), Nov. 3rd; Maj. E. Boucher (Staff Paymaster, R.N.), Nov. 8th; Lt. (actg. Capt.) the Hon. H. C Smith, and is granted the hon. rank of Lt., Nov. 30th

Lt. D. Burt relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Nov 30th.

The following Sec. Lts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lt. :—B. S. Eytinge, R. G. L Simpson, Nov. 30th.

Sec. Lt. T. Martin resigns his commn., Nov. 30th.

The notification in "Gazette," June 14th, concerning Sec. Lt. S. D. Gardiner is cancelled.

Technical Branch.—Maj. G. L. Wightman to be Maj. (Grade A), from (Ad.), Oct. 19th

Maj. A. P. Hartley to be graded for pay as Sqdn. Comdr. while empld. as Maj. (Grade B), from (A.), Aug. 1st.

S. J. L Vincent (Maj., Spec. List) is granted a temp. commn. as Maj., July 23rd, seny. April 1st.

A. Crook (Capt. and Qrmr. in Army) is granted a temp. commn. as Capt., Sept. 28th, seny. April 1st, and to be actg. Maj. while empld. as Maj. (Grade A).

Capt. T. H. Vitty to be actg. Maj. while empld. as Maj. (Grade B), Oct. 28th.

Capt. (Hon. Maj.) A. E. Hatton to be Capt., from S.O., Sept. 2nd.

C. M. Alport (Lt., R. Highrs.) is granted a temp. commn. as Lt. (Grade B), May 24th, seny. April 1st, and to be actg. Capt. while holding a special appt. at the Ministry of Munitions.

Lts. to be actg. Capts. while empld. as Capts. (Grade A) :—G. M. E. Bayly, from (O.), April 10th; F. A. Mawdsley, June 21st; W. Dawson, June 29th; H. E. Haslehurst, from (A.), Sept 16th; F. C. Elstob, Sept. 17th; C. L. Willcox, Oct. 11th.

Sec Lt. (Hon. Capt.) L. J. J. Murfin to be actg. Capt. while empld. as Capt.(Grade A), June 6th.

Lts. to be Lts. (Grade A) :—L. G Prideaux, from (A.), Sept. 6th; W. D. Hogarth, from (Ad.), Sept. 19th

Lts. (O.) to be Lts. (Grade A) :—S W. Agar, H. A. Samson, April 1st; R. F. Rowbotham, May 7th; F. C. Elstob, May 8th; F. A. Mawdsley, May 29th; F. J. Pullen, June 12th; G. R. Barry, July 14th.

Lts. (O.) to be Lts. (Grade B) :—R. F. L. Bush, May 29th; A. D. K. Craig, Sept. 25th.

Sec. Lt. (Hon. Lt.) R. A. Carswell to be actg. Lt. whilst empld. as Lt. (Grade A), April 1st.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. (Grade B) :—W. H. Griffith, July 28th; H. T. Hamblin, July 31st.

The following Sec. Lts. relinquish their commns. on ceasing to be empld. :—(Hon. Lt.) J. E. Bottomley (Lt., Wilts R., T.F.), Aug. 29th; (Hon Capt.) G. G. Watson, M.C. (Capt., Worc. R., T.F.), Nov. 18th.

Sec Lt. A. J. Annandale relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., Nov. 30th.

The notification in "Gazette," Oct. 4th, concerning Lt. (actg. Capt.) F. B. Bayly is cancelled.

Medical Branch.—A. P. Woollright (late Capt., R.A.M.C.) is granted a temp. commn. as Capt., Aug. 14th (substituted for notification in "Gazette," Aug. 13th).

The following are granted temp. commns. as Capts. :—W. F. Wilson (late Capt., R.A.M.C.), Nov. 25th; P. A. Hall, Nov 26th.

The following are granted temp. commns. as Lts. :—C. McC. Jones (Hon. Capt., Ret List), and to be Hon. Capt., Nov. 25th; S. G. Seymour, Nov. 26th; W. F. Sheil, Nov 27th.

The notification in "Gazette," Nov. 8th, concerning R. J. Aherne (late temp. Capt., R.A.M.C.) is cancelled

Chaplains Branch.—Rev. P. E. Healey (late temp. Chaplain to the Forces, 4th Cl., A.C.D.) is granted a temp. commn. as Chaplain, with the relative rank of Capt., Nov. 26th.

Memoranda.—L. C. Galloway (late Lt., R.A.F.) is granted the hon. rank of Lt.

The following Sec. Lts. are granted the hon rank of Lt. :—S. U. Dent, N. W. G. Wilkinson.

Lt. F. A. Whittall to take rank and prec. as if his appt. as Lt. bore date Sept. 7th.

Air Ministry, Nov 30th.

The King has been pleased to confer the Victoria Cross on the following officers of the Royal Air Force, in recognition of bravery of the highest possible order :—

Capt. (A./Maj.) William George Barker, D.S.O., M.C., No. 201 Sqdn., R.A.F.

On the morning of Oct. 27th, 1918, this officer observed an enemy two-seater over the Forêt de Mormal. He attacked this machine, and after a short burst it broke up in the air At the same time a Fokker biplane attacked him, and he was wounded in the right thigh, but managed, despite this, to shoot down the enemy aeroplane in flames.

He then found himself in the middle of a large formation of Fokkers, who attacked him from all directions, and was again severely wounded in the left thigh, but succeeded in driving down two of the enemy in a spin.

He lost consciousness after this, and his machine fell out of control. On recovery he found himself being again attacked heavily by a large formation, and singling out one machine, he deliberately charged and drove it down in flames.

During this fight his left elbow was shattered and he again fainted, and on regaining consciousness he found himself still being attacked, but, notwithstanding that he was now severely wounded in both legs and his left arm shattered, he dived on the nearest machine and shot it down in flames.

Being greatly exhausted, he dived out of the fight to regain our lines, but was met by another formation, which attacked and endeavoured to cut him off, but after a hard fight he succeeded in breaking up this formation and reached our lines, where he crashed on landing.

This combat, in which Maj. Barker destroyed four enemy machines (three of them in flames), brought his total successes up to 50 enemy machines destroyed, and is a notable example of the exceptional bravery and disregard of danger which this very gallant officer has always displayed throughout his distinguished career.

Maj. Barker was awarded the Military Cross on Jan. 10th, 1917; first Bar on July 18th, 1917; the Distinguished Service Order on Feb. 18th, 1918; second Bar to Military Cross on Sept. 16th, 1918; and Bar to Distinguished Service Order on Nov. 2nd, 1918

Lt. (A./Capt.) Andrew Weatherby Beauchamp-Proctor, D.S.O., M.C., D.F.C., No. 84 Sqdn., R.A.F.

Between Aug. 8th, 1918, and Oct. 8th, 1918, this officer proved himself victor in 26 decisive combats, destroying 12 enemy kite balloons, 10 enemy aircraft, and driving down four other enemy aircraft completely out of control.

Between Oct. 1st, 1918, and Oct. 5th, 1918, he destroyed two enemy scouts, burnt three enemy kite balloons, and drove down one enemy scout completely out of control.

On Oct. 1st, 1918, in a general engagement with about 28 machines, he crashed one Fokker biplane near Fontaine and a second near Ramicourt; on Oct. 2nd he burnt a hostile balloon near Sevilgny; on Oct. 3rd he drove down, completely out of control, an enemy scout near Mont d'Origny, and burnt a hostile balloon; on Oct. 5th the third hostile balloon near Bohain.

On Oct. 8th, 1918, while flying home at a low altitude, after destroying an enemy two-seater near Maretz, he was painfully wounded in the arm by machine-gun fire, but, continuing, he landed safely at his aerodrome, and after making his report was admitted to hospital.

In all he has proved himself conqueror over 54 foes, destroying 22 enemy machines, 16 enemy kite balloons, and driving down 16 enemy aircraft completely out of control.

Capt. Beauchamp-Proctor's work in attacking enemy troops on the ground and in reconnaissance during the withdrawal following on the Battle of St. Quentin from March 21st, 1918, and during the victorious advance of our Armies commencing on Aug. 8th, has been almost unsurpassed in its brilliancy, and as such has made an impression on those serving in his squadron and those around him that will not be easily forgotten.

Capt. Beauchamp-Proctor was awarded Military Cross on June 22nd, 1918; D.F. Cross on July 2nd, 1918; Bar to the M.C. on Sept. 16th, 1918; and Distinguished Service Order on Nov. 2nd, 1918

Foreign Decorations.

The King has granted unrestricted permission for the wearing of the following decorations, conferred on the officers and other ranks indicated in recognition of valuable services in connection with the war :—

Conferred by the President of the French Republic.

Legion d'Honneur.

Croix d'Officier.

Col. (A./Brig.-Gen.) R. E. Trower Hogg, C.I.E. (Ind. Army)
Maj (A./Lt.-Col.) A. V. Holt, D.S.O. (R. Highrs.).
Lt.-Col. R. P. Mills, M.C. (R. Fus.).

Croix de Chevalier.

Lt. (A./Capt.) O. M. Baldwin, D.F.C.
Lt. (A./Capt.) G. L. Graham, D.F.C.
Lt. (A./Capt.) W. B. Green, D.F.C.
Sec. Lt. (Hon. Lt.) C. P. Harrison, M.C.
Lt. (A./Capt.) E. J. Salter.
Capt. H. W. Woollett, D.S.O., M.C. (Linc R.)

Medaille Militaire.

2249 Serjt.-Mech. H. W. Bush (Paddington, W.).
140801 Pte., 1st Cl., E. R. MacDonald (Matheson, Ont., Can.)
15399 Serjt. S. B. Percival (Manch. R., attd. R.A.F.) (killed Aug. 14th, 1918).
240289 Serjt.-Obsr. F. L. Roberts (Finsbury, London).

War Office, Dec. 2nd.

His Majesty the King has been graciously pleased to approve of the following awards to the undermentioned officers and warrant officers in recognition of their gallantry and devotion to duty in the field :—

The Distinguished Service Order.

Capt. Eric Mackay Murray, M.C., Q.V.O., Corps of Guides, I.A., and R.F.C. (Mesopotamia.)

For conspicuous gallantry and devotion to duty during three months' operations. He persistently showed courage and ability of a high order throughout. He was three times in action against enemy aircraft, and on the last occasion returned with 20 bullet-holes in his machine, after his passenger had emptied 1½ drums of ammunition from a Lewis gun at the adversary.

The Military Cross.

Capt. John Overton Cone Orton, 2nd Bn., Norf. R., attd. R.F.C. (Mesopotamia.)

For conspicuous gallantry and devotion to duty during three months' operations. He showed splendid qualities as an observer and rendered most valuable service. His intimate knowledge of the country enabled his reports to be most accurate throughout. He was three times in action against enemy aircraft, and on the last occasion returned with 20 bullet-holes in his machine, after 1½ drums of ammunition from a Lewis gun had been emptied at the adversary.

Air Ministry, Dec. 3rd.

His Majesty the King has been graciously pleased to confer the undermentioned rewards on officers and other ranks of the Royal Air Force in recognition of gallantry in flying operations against the enemy :—

Awarded the Distinguished Service Order.

Capt. Edgar James McClaughry, D.F.C. (Aust. F.C.). (France.)

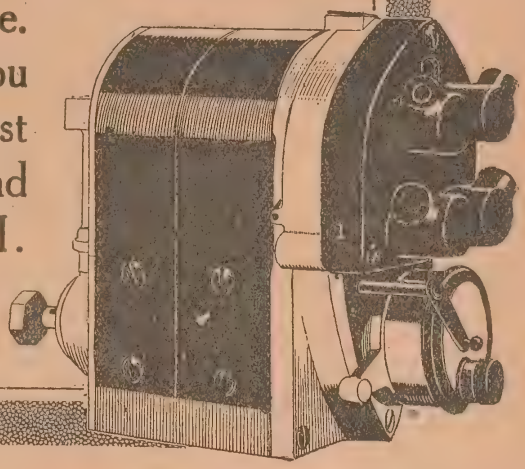
A bold and fearless officer, who has performed many gallant deeds of daring, notably on Sept. 24th, when, attacking a train at 250 ft. altitude, he obtained a direct hit, cutting it in two, the rear portion being derailed. He then fired a number of rounds at the fore portion, which pulled up. Sighting a hostile two-seater, he engaged it and

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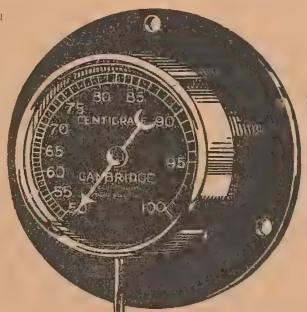
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drove it down. Proceeding home he observed seven Fokker biplanes; although he had expended the greater part of his ammunition, Capt. McClaughry never hesitated, but engaged the leader. During the combat that ensued he was severely wounded by fire from a scout that attacked him from behind; turning, he drove this machine off badly damaged. His ammunition being now expended he endeavoured to drive off two hostile scouts by firing Very lights at them. Exhausted by his exertions, he temporarily lost consciousness, but recovered sufficiently to land his machine safely. This officer has destroyed 14 machines and four balloons, and has repeatedly displayed an utter disregard for danger in attacking ground targets. (D.F.C. gazetted Sept. 21st, 1918; Bar to D.F.C. same date.)

AWARDED A BAR TO THE DISTINGUISHED FLYING CROSS.

Lt. (A./Capt.) OWEN MORGAN BALDWIN, D.F.C. (France.)

A gallant and determined officer, conspicuous for his skill and daring in attack. Since he was awarded the Distinguished Flying Cross he has destroyed six enemy aircraft and driven down two out of control, accounting for four in one day. In all he has to his credit 13 machines destroyed and three driven down out of control. (D.F.C. gazetted Sept. 21st, 1918.)

Lt. (A./Capt.) RONALD BURNS BANNERMAN, D.F.C. (France.)

A bold and resolute leader, whose ability inspires confidence in those who serve with him. During the operations in September he accounted for six enemy machines, displaying marked courage and judgment. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) HORACE DALE BARTON, D.F.C. (France.)

An excellent patrol leader, combining in a marked degree coolness and courage. Since July 30th he has destroyed three enemy machines and driven down three out of control. He has also rendered most valuable service in attacking enemy troops on the ground, silencing, on Aug. 30th, a hostile battery and causing the horses to stampede. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) REGINALD CAREY BRENTON BRADING, D.F.C. (France.)

An exceptionally keen and daring patrol leader who has accounted for five enemy machines during the last month. On Sept. 2nd, while leading his flight, he observed 12 Fokker biplanes, which he at once engaged, driving one down out of control. Later, on the same day, he engaged a formation of Fokkers that were harassing our corps machines, causing one to crash. This officer's skill and bravery have proved a great incentive to the other pilots of his squadron. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) COLIN PETER BROWN, D.F.C. (Sea Patrol, Flanders.)

A fine fighting pilot and brilliant leader who has destroyed 13 enemy aircraft. On Oct. 4th he led his formation of 15 scouts to attack a superior number of the enemy. Nine of the latter were destroyed, Capt. Brown, single-handed, accounting for three. (D.F.C. gazetted Sept. 21st, 1918.)

Lt. (A./Capt.) CARL FREDERICK FALKENBERG, D.F.C. (Quebec R.). (France.)

A gallant and skilful fighter who, since he was awarded the Distinguished Flying Cross, has destroyed four enemy machines and one balloon, and has also driven down two more machines out of control, making in all 14 enemy aircraft and one balloon to his credit. He has further rendered gallant service in attacking ground targets and reconnoitring enemy lines. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) GEORGE BRIAN GATES, D.F.C. (France.)

This officer sets a fine example to the other pilots of his squadron, being conspicuous for his cool courage and brilliant leadership. During the past month he has accounted for six enemy two-seaters, five being driven down in flames and one crashed. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. THOMAS SINCLAIR HARRISON, D.F.C. (France.)

Bold in attack, skilful in manœuvre, this officer never hesitates to engage the enemy, however superior in numbers. On Oct. 2nd he, with three other machines, took part in an engagement with eight Fokkers; four of these were destroyed, Lt. Harrison accounting for one. On another occasion he, in company with four others, engaged a large formation of Fokkers; three of these were destroyed, one by this officer. In all he has destroyed 20 enemy machines. (D.F.C. gazetted Sept. 21st, 1918.)

Lt. (A./Capt.) WILLIAM FREDERICK JAMES HARVEY, D.F.C. (France.)

A brilliant fighting pilot, who has proved himself a capable leader in many offensive patrols. During the August operations he personally accounted for seven enemy machines and, in company with another pilot, destroyed an eighth, displaying courage and tenacity of high order. (D.F.C. gazetted July 2nd, 1918.)

Capt. WILLIAM HENRY HUBBARD, D.F.C. (France.)

This officer has shown great bravery and devotion to duty both in destroying enemy aircraft—10 of which he has accounted for—and in silencing anti-Tank guns. On Sept. 27th, flying at altitudes between 200 and 1,500 feet, he engaged and silenced many anti-Tank guns, thereby rendering valuable service. He at the same time completed a detailed and accurate reconnaissance of the area, locating the position of our troops. (D.F.C. gazetted Aug. 3rd, 1918.)

Lt. (A./Capt.) WILLIAM ROY IRWIN, D.F.C. (France.)

This officer is an exceptionally skilful pilot leader, combining fine fighting qualities with sound, clear judgment. On Aug. 12th he led his patrol to attack a large formation of Fokker biplanes; he himself accounted for two of them. On a later date, attacking a formation of Fokker biplanes, he again destroyed two, the patrol accounting for two others. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. CLIFFORD MCEWEN, M.C., D.F.C. (15th Res. Bn., Can. Inf.). (Italy.)

A brilliant and courageous pilot, who has personally destroyed 20 enemy machines. Exhibiting entire disregard of personal danger, he never hesitates to engage the enemy, however superior in numbers, and never fails to inflict serious casualties. His fine fighting spirit and skilful leadership inspired all who served with him. (M.C. gazetted Sept. 16th, 1918; D.F.C. gazetted July 2nd, 1918.)

Sec. Lt. (A./Capt.) HAMISH DUNCAN MCLAREN, D.F.C. (Sea Patrol, Flanders.)

A very gallant officer and an exceptionally good flight commander. He has taken part in sixty-five raids, rendering on all occasions valuable service, notably on Sept. 28th, when, in our advance, he carried out four raids on enemy railway junctions. During one of these he encountered a large formation of enemy aeroplanes, which he engaged, shooting down two. In the combat his observer was wounded in both legs. (D.F.C. gazetted Nov. 2nd, 1918.

Lt. (A./Capt.) ROBY LEWIS MANUEL, D.F.C. (Aust. F.C.). (France.)

On many occasions this officer has led his patrol with exceptional ability and courage, notably on Sept. 16th, when, with a patrol of eleven machines, he engaged fifteen hostile aircraft. By skilful manœuvre he completely defeated the enemy in a combat that only lasted twenty minutes, at the expiration of which period only four hostile machines remained in the air, and these retired. Six of the enemy machines were seen to fall in a manner that would justify the supposition that they would crash. (D.F.C. gazetted July 2nd, 1918.)

Lt. ARTHUR EDEN REED, D.F.C. (France.)

A bold and skilful scout pilot of undaunted courage who has destroyed eleven enemy aircraft. On August 31st he, single-handed, attacked five Fokkers shooting one down. And this is only one instance of several where he has successfully engaged the enemy in superior numbers. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) CHARLES GORDEN ROSS, D.F.C. (France.)

A fine fighting pilot and leader who has destroyed twelve enemy machines. On Oct. 2nd he, with three other machines, attacked eight Fokker biplanes; in the engagement that followed four of these were destroyed, Capt. Ross accounting for one. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) WILLIAM ERNEST STATON, M.C., D.F.C. (France.)

This officer has already been awarded the Military Cross and the Distinguished Flying Cross for conspicuous gallantry and devotion to duty. Since his last award he has destroyed five enemy machines and driven down one out of control. His example of courage and resource is a fine incentive to the other pilots of his squadron. (M.C. gazetted June 22nd, 1918.) (D.F.C. gazetted Sept. 21st, 1918.)

Lt. (A./Capt.) EDWIN SWALE, D.F.C. (Sea Patrol, Flanders.)

A gallant and determined officer. On Oct. 1st Capt Swale led his patrol to attack eleven Fokker biplanes; in the engagement that ensued he drove down the leader, which crashed and caused a second machine to fall out of control. In addition to the foregoing, this officer has destroyed nine hostile 'planes and driven down five out of control. (D.F.C. gazetted Nov. 2nd. 1918.)

Lt. (A./Capt.) ADRIAN JAMES BOSWELL TONKS, D.F.C. (Sea Patrol, Flanders.)

Since Sept. 28th this officer has led eleven low bombing raids, displaying conspicuous courage and skill, and inflicting serious damage on enemy from low altitudes. During bombing raids Capt. Tonks has destroyed two enemy machines, proving himself a bold and daring fighter. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. (A./Capt.) FRANK ROY WALKER, D.F.C. (Middx. R.) (France.)

This officer displays conspicuous skill and resolute determination in carrying out low reconnaissances and contact patrols, often under very adverse weather conditions and in face of heavy machine-gun and rifle fire, notably on Sept. 30th when he penetrated four times to about 5,000 yards behind the enemy lines in order to locate certain troops with whom all touch had been lost. He obtained the necessary information and carried out an exhaustive and most valuable reconnaissance of the area. On his return his machine was found to be riddled with bullets. (D.F.C. gazetted Nov. 2nd, 1918.)

Lt. CROYE ROTHES PITHEY, D.F.C. (France.)

Sec. Lt. (A./Lt.) HERVEY RHODES, D.F.C. (York. R.) (France.)

Lt. Pithey and his observer, Lt. Rhodes, have crashed five enemy aeroplane and driven down five out of control; in addition, they have shot down two balloons in flames, displaying conspicuous courage and skill on all occasions. On Sept. 1st they attacked an enemy two-seater on contact patrol; this machine at first retired east but returned, accompanied by six scouts, to the attack; after a short engagement they were driven off, and Lt. Pithey, although his machine was badly shot about, continued his patrol and brought back a most valuable and accurate report. (Both D.F.C.'s gazetted Aug. 3rd 1918.)

AWARDED THE DISTINGUISHED FLYING CROSS.

Lt. (A./Capt.) EDWARD JOHN ADDIS. (Sea Patrol, North Sea.)

A bold and determined officer who, during the last ten months, has displayed conspicuous zeal in tracking and engaging hostile submarines, carrying out this service frequently in most adverse weather conditions. He sets a fine example to others in his flight.

Lt. CHARLES EDWARD HAMILTON ALLEN. (France.)

This officer has carried out many long-distance photographic flights and reconnaissances. In these operations he has invariably shown marked determination, and has proved himself a gallant and skilful fighter. On Aug. 8th he undertook a photographic reconnaissance which was urgently required; several previous attempts had been made to carry it out without success owing to adverse weather conditions. Lt. Allen, flying through clouds and handicapped by a high wind, successfully reached the objective and completed the reconnaissance. His return journey was an especially noteworthy flight, owing to the great banks of clouds, in one of which he spun from 18,000 feet to 4,000 feet.

Lt. EDGAR OXENHAM AMM. (France.)

A gallant and dashing airman who has destroyed four enemy machines and a balloon. On Sept. 17th, in company with six other machines, this officer took part in an engagement with seventeen hostile aircraft; eight of these were destroyed, Lt. Amm accounting for one.

Lt. (A./Capt.) DURBAN VICTOR ARMSTRONG. (France.)

A brilliant pilot of exceptional skill. His success in night operations has been phenomenal; and the services he renders in training other pilots is of the greatest value, personally supervising their flying and demonstrating the only successful method of attack by night. On the night of Sept. 10th-11th, learning that an enemy aeroplane was over our front, he volunteered to go up. The weather conditions were such as to render flying almost impossible, the wind blowing about fifty miles an hour, accompanied by driving rainstorms; despite this, Capt. Armstrong remained on patrol for over an hour, his machine at times being practically out of control. The foregoing is only one of many instances of this officer's remarkable skill and resolution in night operations.

Lt. (A./Capt.) JOHN AUSTIN-SPARKS. (France.)

An officer distinguished for gallantry and fine leadership. On Sept. 29th Capt. Austin-Sparks rendered exceptionally fine service. Detailed to carry out an important reconnaissance, he succeeded in reaching his objective and obtaining the necessary in-

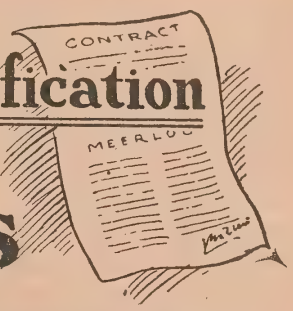
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formation. The opposition he had to encounter was exceptionally heavy and concentrated; his machine was badly damaged, and his observer's gun, with its mounting, was carried away by shell fire. Eventually both he and his observer were wounded, Capt. Austin-Sparks being rendered temporarily unconscious and unable to control his machine. He, however, recovered sufficiently to land his machine safely with the aid of his observer

Sec. Lt. Thomas Harry Barkell (Aust. F.C.) (France.)

Although this officer only joined his squadron some two months ago, his outstanding ability soon qualified him for the leadership of a patrol; and he has already acted as leader in twenty-three offensive flights. His conduct of these patrols, and the results he has achieved, testify to his exceptional enterprise and fully justifies his early appointment to the responsible position of leader.

Lt Bliss Edward Barnum. (Sea Patrol, Flanders.)

In the absence of his flight commander, Lt. Barnum has since Sept. 28th acted as leader in eleven successful low bombing raids In these he has shown marked courage and devotion to duty, descending at times to fifty feet altitude. In addition, this officer has destroyed four enemy machines.

Lt. (A./Capt.) Alexander Beck. (France.)

A bold and skilful leader, who has himself shot down four enemy aeroplanes. His personal courage and able leadership have had a marked influence in maintaining the efficiency of the squadron.

Lt. (A./Capt.) Frank Belway. (France.)

A very gallant officer, who is always ready to volunteer for any dangerous duty. During recent operations he has repeatedly brought back most valuable information regarding the development of the situation, flying at very low altitudes and being subjected to heavy hostile fire. On Aug. 25th, during a patrol, he observed an enemy two-seater, calling for flares; attacking this machine, he drove it off; the enemy infantry having lit their flares, Lt. Belway, descending to a very low altitude in face of heavy machine gun fire, was able to obtain most accurate information as to the location of the enemy line.

Sec. Lt. Harold Frank Birchal, R.E. (France.)

During the recent operations this officer has rendered exceptional service. Sparing no effort to press his balloon forward, he was twice compelled to parachute. On Aug. 25th his balloon was hit by shell fire; nose-diving from about 600 feet he, with great presence of mind, tried to save his balloon by ripping. Although half-stunned by the fall, he at once reascended in a fresh balloon. A fine example of determination and devotion to duty

Lt. (A./Capt.) Henry Arthur Richard Biziou. (France.)

A most successful leader of marked gallantry. During recent operations he has destroyed four enemy aeroplanes and driven down one out of control; two of these he accounted for in one engagement on Sept. 15th with a number of Fokker biplanes. In addition he has driven down a hostile balloon

Lt. George Godfrey Leigh Blake, D.C.M. (France.)

Throughout the recent operations this officer has rendered most valuable service in face of heavy hostile fire and attacks by enemy aeroplanes, compelling him on three occasions to parachute. He has completed 470 hours in the air, displaying gallantry and initiative of a high order. (D.C.M. gazetted June 18th, 1917.)

Capt. (A./Maj.) Christopher Joseph Quintin Brand, D.S.O., M.C. (France.)

On the night of Sept. 15th-16th this officer attacked an enemy aeroplane at 8,000 feet. In the combat that ensued his tracers burst the sump of one of the aeroplane's engines and the oil from it covered his machine in a black spray. Almost blinded by this he still continued the engagement and eventually drove the enemy machine down to 200 feet, when, owing to intense hostile machine-gun fire from the ground, he was compelled to break off the combat. There is every reason to believe that this machine crashed. The foregoing is only one of many gallant deeds performed by this officer, who by his indomitable spirit and example has raised the efficiency of his squadron to a very high level. (D.S.O gazetted May 31st. 1918; M.C. gazetted April 26th, 1918.)

Lt. Frank Crossley Griffithes Broome. (France.)

A bold and skilful officer who has displayed conspicuous courage and judgment in many engagements with hostile machines, notably on the night of Sept. 15th-16th, when he observed a giant bombing machine held by searchlights and engaged by our anti-aircraft guns His signals to the guns were not observed and the fire continued, shells bursting all round the enemy machine; disregarding this he, with conspicuous gallantry, closed to 100 yards and drove the machine down in flames.

Lt. Archibald Buchanan, 210th Squadron. (Sea Patrol, Flanders.)

On Sept. 29th this officer displayed great gallantry. In an engagement with 15 Fokker biplanes, owing to engine trouble he was compelled to remain under his flight; he nevertheless accounted for two enemy machines, attacking one under its tail causing it to crash, and driving another down out of control. In addition to the foregoing this officer has destroyed three machines and driven down two out of control.

Capt. (actg. Maj.) Keith Logan Caldwell, M.C. (France.)

A fine fighting airman of courage and determination. On Sept. 4th, when on offensive patrol, he, in company with another machine, attacked four Fokker biplanes; one of these was driven down by this officer. He has accounted for five enemy machines. (M.C. gazetted Sept. 17th, 1917.)

Capt. Douglas Hugh Moffatt Carbery, M.C. (R.F.A.) (France.)

During recent operations this officer has displayed remarkable courage and skill in attacking hostile batteries, troops, etc., rendering valuable service in silencing the former and causing heavy casualties to the latter. In the air he is a bold and intrepid fighter. On Aug. 30th he and his observer, attacked by seven Fokker biplanes, drove them off, shooting down one out of control. (M.C. gazetted March 26th, 1917.)

Lt. (Actg. Capt.) Walter Macfarlane Carlaw. (France.)

A bold and skilful fighter who has accounted for five enemy machines—two in one engagement, which occurred on July 31st.

Sec. Lt. (actg. Lt.) Robert Francis Casey, R. Innis. Fus. (Indt. Force, France.)

On Sept. 25th the machine in which this officer was an observer on a long-distance bombing raid was attacked by a number of enemy aeroplanes. In the engagement Lt. Casey, having shot down two enemy scouts, was wounded in the thigh; he, however, continued the action until he fainted. At this time four enemy machines were firing at close range. The pilot roused Lt. Casey, who, with fine determination, brought his gun into action and shot down two of the attacking aeroplanes out of control; the remaining two then broke off the engagement. Exhausted by the effort, Lt. Casey again fainted and was landed in a French aerodrome. A very fine example of skill, courage and devotion to duty on the part of Lt. Casey.

Lt. Oliver Chance Cassels. (France.)

On Aug. 21st this officer carried out a most successful artillery patrol lasting three and a half hours. He observed thirteen active hostile batteries, three of which were silenced. As an artillery pilot his work has been quite exceptional, and while engaged on this service he never hesitates to engage enemy aeroplanes as opportunity occurs.

Maj. Hugh Vivian Champion de Crespigny, M.C. (Suff. R.). (France.)

A brilliant and gallant officer who displays high initiative in night flying, in which service his example has been invaluable to those under his command. On the night of Sept. 23rd-24th Major Champion de Crespigny carried out a long-distance bombing raid. Flying a machine unsuitable for night duty, and in face of adverse weather conditions, he reached, and successfully bombed, his objective. A fine performance, calling for cool courage and determination. (M.C. gazetted May 16th, 1916.)

Sec. Lt. Ernest John Clark. (France.)

A gallant and skilful officer who has rendered valuable service on night-bombing and reconnaissance duty. On the night of Aug. 21st-22nd, when reconnoitring a road at a low altitude, he bombed with great success, fourteen motor transports. On a second flight during the same night he bombed enemy horse transports, destroying eight transport wagons and their teams. Later on, with his last bomb, he obtained a direct hit on two motor lorries.

Sec. Lt. (Hon. Lt.) James Bruce Vaughan Clements, R.F.A. (France.)

An officer who, during recent operations, has rendered valuable and gallant service on various duties. He has attacked numerous parties of enemy infantry and hostile batteries, silencing the latter and causing heavy casualties to enemy personnel. On one occasion he volunteered to carry out a photographic reconnaissance that was urgently required. Despite extremely adverse weather conditions he succeeded in taking the photographs required, displaying marked skill and resolute determination.

Lt. Herbert James Cockman. (Indt. Force, France.)

On Sept. 25th, when on a long-distance bombing raid, this officer performed very gallant service. Heavily attacked on the return journey, he was severely wounded, his left arm being shattered and his right leg hit. Owing to his wounds and loss of blood, he was unable to control his machine, but by instructing his observer he was able to keep his formation until he crossed the lines. Owing to his condition, he had the greatest difficulty in landing, and it was only due to his determined courage that he succeeded in doing so

Lt. (actg. Capt.) Eugene Seeley Coler. (France.)

Bold in attack and skilful in manœuvre, this officer never hesitates to engage the enemy regardless of disparity in numbers. On Aug. 13th, when on escort duty, he dived on a formation of twenty enemy aeroplanes. In the engagement that ensued he himself destroyed three and his observer two—making a total of five machines destroyed in the fight; a fine performance, reflecting great credit on the officers concerned.

Sec Lt. (actg. Lt.) Harold Arthur Coysh, R.G.A. (France.)

A capable and gallant observer who has done consistent good work on contact and counter-attack patrols. His success in locating and engaging anti-aircraft guns has materially assisted his pilot in obtaining accurate information as to the locality of our troops.

Lt. (actg. Capt.) James Anderson Craig. (France.)

On Aug. 24th this officer performed gallant service on a special reconnaissance. Having located our line and the enemy positions, despite very heavy hostile fire and under adverse weather conditions, he proceeded over the enemy lines at a very low altitude to try and find some of our troops that were believed to be cut off. His machine being hit in many places, he returned, made his report, and proceeded again on a further contact patrol.

Lt. (actg. Capt.) Alfred Richard Cross. (France.)

During recent operations this officer has carried out many successful reconnaissances at low altitudes, bringing back valuable and reliable information. On four successive days in August he carried out contact patrols; on each occasion, with fine disregard for personal danger, he deliberately drew hostile fire in order to locate with certainty the position of the enemy.

Lt. (actg. Capt.) Frederick William Deans, R. I. Rif. (Air Raid Service).

An exceptionally able officer, who has taken part in numerous hostile air raids by day and night. On the night of May 19th-20th, when at 10,000 ft. altitude, his machine took fire; with rare presence of mind and cool courage Capt. Deane brought it down in safety, thereby saving the life of his observer.

Capt. Roger Amedee Delhaye. (France.)

A most efficient fighting leader to whose example the high standard of efficiency attained by his squadron is largely due. He has led numerous offensive patrols, accounting personally for eight enemy machines. On all occasions he has shown high courage, ability, and fine leadership.

Lt. David Frederick Dimsey (Aust. F.C.) (France.)

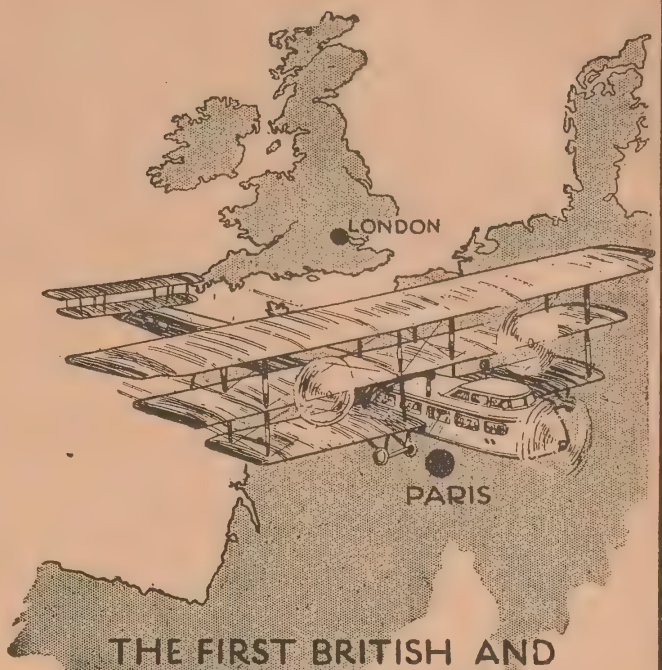
This officer has displayed conspicuous bravery in carrying out contact patrols, notably on Sept. 16th, when, in face of intense anti-aircraft and machine-gun fire, he flew over the line at a height of 800 ft., accurately pin-pointing the line until his observer was killed. He then returned to his aerodrome and rendered a valuable report of the situation.

Sec. Lt. William Frank Dollery. (R.G.A.) (France.)

Throughout the recent operations this officer has set a magnificent example of fearlessness and devotion to duty. On Sept. 29th, when observing from a balloon, he was forced by an enemy attack to parachute, but, although he had already been up for five hours, Sec.

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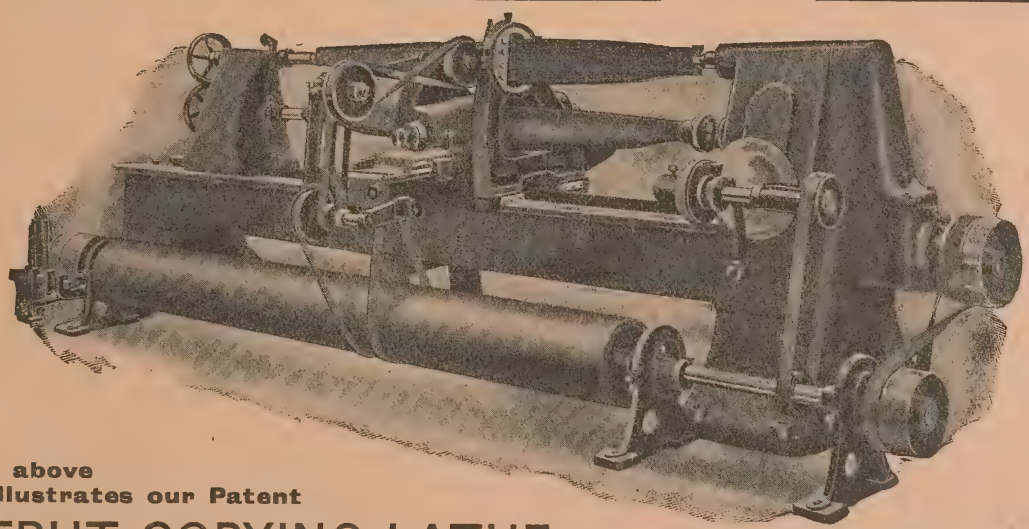
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Lt. Dollery, with most praiseworthy keenness, immediately re-ascended and continued to observe until weather conditions made it necessary to haul down the balloon.

Lt. Gordon Metcalfe Duncan. (France.)

A courageous fighter and skilful leader who has accounted for seven enemy aeroplanes. On Sept. 5th, when on escort duty, he attacked a formation of five Fokker biplanes; one of these he engaged at close range and it was seen to break up in the air; he then drove down a second out of control.

Lt. William Stanley Eastaugh. (France.)

During recent operations this officer advanced his balloon over very difficult country, keeping up with the artillery and transmitting much valued information. His balloons were frequently burnt by hostile fire, and on Sept. 1st the balloon, hit by shell fire, dived about 1,000 ft.; Lt. Eastaugh, though subjected to heavy hostile fire, endeavoured to salve the wreckage, setting a fine example of devotion to duty.

Sec. Lt. Harold Edwards. (France.)

When on offensive patrol, during Sept. 16th, this officer with nine other machines, engaged twelve enemy scouts. In the combat that ensued he destroyed one, his pilot accounting for a second, and they took part in destroying a third. In all Sec. Lt. Edwards has accounted for nine enemy machines, setting an excellent example of gallantry worthy of high praise.

Lt. Cyril Norman Ellen. (Sea Patrol, Mediterranean.)

A keen and exceptionally able observer who for over a year has performed most valuable service in photographic flights at low altitudes and at times under very difficult conditions.

Lt. Harold Robert Wake Ellison. (Sea Patrol, Flanders.)

During recent operations this officer has rendered conspicuous service as a pilot of heavy bombers. He has taken part in 35 successful raids, displaying at all times marked courage and perseverance, no matter how adverse the weather conditions.

Lt. (actg. Capt.) Dudley Lloyd Evans, M.C., Wales Bord. (France.)

A brilliant fighting pilot who has carried out numerous offensive and low-bombing patrols with marked success. He has accounted for six enemy aeroplanes, and in these combats in the air he is conspicuous for dash, determination and courage. (M.C. gazetted Dec., 1916.)

Lt. Alfred Juan Oswald Farina. (Sea Patrol, Irish Sea.)

During the last four months this officer has carried out 350 hours' sea patrols. He has rendered valuable service in locating hostile submarines, displaying remarkable keenness of observation and devotion to duty.

Lt. Harold Archibald Edward Gard. (France.)

On Sept. 8th this officer was on observation duty from a balloon; the wind increased to such strength that the cable snapped and the balloon was carried towards the enemy lines; seeing that it could not be landed in our lines, he collected all maps and threw them overboard, and ordered the other observer to descend; he then collected the instruments, etc., and made a parachute descent, landing near our outpost lines. In acting thus Lt. Gard displayed most praiseworthy coolness and devotion to duty, as he fully realised that by remaining in the basket to collect the instruments he was in great danger of being carried over the enemy lines.

Lt. (actg. Capt.) George Everard Gibbons, M.C. (France.)

On Aug. 4th, when leading a patrol, his formation was attacked by 20 enemy aeroplanes. Seeing one of our Bristol fighters, in difficulties with its propeller, being attacked by one of the enemy machines, he dived and drove it down to crash; when climbing back to join his formation his observer shot down another enemy machine. In addition to the foregoing Capt. Gibbons has destroyed four enemy aeroplanes and driven down three out of control. The gallantry in action he invariably displays sets an inspiriting example to those with whom he serves. (M.C. gazetted Sept. 16th, 1918.)

Capt. (actg. Major) Evan James Leslie Warren Gilchrist, M.C. (6th Lancers.) (France.)

A fine leader, keen and courageous, who has inculcated a high standard of devotion to duty in his squadron. On Aug. 1st, leading his squadron on a bombing raid over an enemy aerodrome, he descended as low as 10 ft. from the ground, causing much damage to sheds and machines with his bombs and machine-gun fire. During the operation his machine was heavily shot about by hostile fire. (M.C. gazetted Oct. 20th, 1916.)

Capt. Arthur Willougby Falls Glenny, M.C. (A.S.C.) (France.)

This officer has rendered valuable and gallant service on many occasions when on photographic and other reconnaissances. On May 16th, when directing fire on a hostile battery, he was attacked by 12 hostile scouts; his observer's gun jammed, and he was driven down to 2,000 feet, but, handling his machine with great skill, he avoided serious damage; after the scouts had been driven off he returned and carried on the shoot with successful results. In this flight, which lasted four hours, he succeeded in taking fifteen photographs over corps' counter-battery area. (M.C. gazetted Sept. 17th, 1917; Bar to M.C. July 26th, 1918.)

Lt. (actg. Capt.) Clive Beverley Glynn (Lpool. R.). (France.)

This officer has shown remarkable skill and bravery in aerial combats, never hesitating to attack, without regard to disparity of numbers. He has accounted for four machines—two in one flight.

Sec. Lt. (actg. Capt.) Harry King Goode. (Italy.)

A brilliant fighting pilot who sets a fine example of courage and determination to the officers of his squadron. He has destroyed six enemy aeroplanes and two kite balloons.

Lt. (actg. Capt.) Wilfred Barrat Green. (France.)

A bold and very gallant officer who has destroyed two enemy aeroplanes and driven down five out of control. He has also shown a fine offensive spirit in engaging ground targets during the recent battles, using his machine guns with great effect.

Lt. (actg. Capt.) William Edward Green. (France.)

A skilful and courageous pilot and a brilliant leader, conspicuous for his sound judgment. No difficulties daunt him, and he has never failed to carry out any task that he may have been set. He sets a splendid example to the whole squadron.

Lt. Gerald Aloysius Griffin (R. Dub. Fus.). (France.)

An officer of high courage and initiative who has carried out a number of contact patrols at low altitudes and in face of heavy hostile fire, obtaining most satisfactory reports. While on one contact patrol on Aug. 21st he saw a number of the enemy retreating into a town; descending to a low altitude under heavy machine gun fire he followed them up, inflicting a number of casualties.

Capt. Arthur Cecil Haywood Groom. (Ind. Force, France.)

This officer led a formation in a successful long-distance bombing raid against an enemy town on Sept. 25th; during the operations the leader of another formation was shot down, and this formation was broken up. Capt. Groom rallied these machines and kept them together, displaying marked initiative and daring, for, both on the outward and return journey, he was subjected to incessant attacks by enemy formations. The skill and determination shown by this officer on this occasion calls for the highest praise, for it was largely due to his efforts that the objective was successfully bombed and that his formation and the remaining machines of the other returned safely in the face of the hostile attacks.

Sec. Lt. Charles Gordon Haigh. (France.)

This officer has been conspicuous for his determination and devotion to duty while carrying out contact patrols, notably on Sept. 12th, when, in spite of low clouds and driving rain, he successfully located a number of our posts. To obtain this information he was compelled to descend to 200 feet, as no flares were lit.

Lt. Meredith Ogden Haskell, R.F.A. (France.)

During recent operations this officer has rendered most valuable service in bringing back accurate information as to the position of our lines. In this service he has displayed great keenness and disregard of danger, persevering in face of hostile attacks in the air and heavy fire from the ground.

Sec. Lt. (Hon. Lt.) James Alexander Gordon Haslam, M.C., R.F.A. (France.)

On Aug. 10th this officer performed a very gallant action. While carrying out a contact patrol he was attacked by seven enemy scouts. Although wounded in the leg at the outset of the engagement, Lt. Haslam, with rare courage and determination, continued to serve his machine gun. One of the enemy aeroplanes was driven down, and the remainder dispersed. (M.C. gazetted July 26th, 1918.)

Lt. Sidney William Highwood. (France.)

An officer of exceptional skill and courage who, since Aug. 8th, has accounted for nine enemy aircraft, driving down five kite balloons in flames, destroying two enemy machines, and shooting down two others out of control.

Sec. Lt. (Hon. Capt.) Alan Morton Francis Hill, K.R.R.C. (France.)

On Sept. 2nd, whilst flying at 200 feet altitude, this officer's machine was heavily engaged by enemy machine guns. He located this party and boldly attacked them, driving them out of their trenches and inflicting severe casualties. Capt. Hill has always carried out his duties in a conspicuously gallant and efficient manner, and the information he has brought back has been of the greatest value.

Sec. Lt. Thomas Godwin Hobbs. (France.)

A skilful and gallant officer. On Aug. 21st this officer did six hours' flying. He was twice attacked by large formations of enemy aeroplanes, but on each occasion, by skilful manœuvre and resolute fighting, he drove them off and continued his patrol, bringing back much valuable and accurate information. On the same day he attacked enemy transport, causing great confusion and inflicting heavy casualties.

Lt. Leslie Norman Hollinghurst, Middx. R. (France.)

Since April 25th this officer has destroyed four enemy aeroplanes and driven down one out of control. At all times he displays great determination and cool courage, notably on Sept. 20th, when, although his petrol tank had been shot through and his machine badly damaged, he attacked and destroyed a Fokker biplane that was stalling to fire on another member of the patrol, thereby saving the life of a brother officer. On numerous other occasions Lt. Hollinghurst by his gallantry has saved from disaster other members of his patrol.

Lt. (actg. Capt.) Ernest Charles Hoy. (France.)

A bold and skilful airman who has accounted for four enemy machines and shot down a balloon in flames, displaying at all times a fine fighting spirit, disregarding adverse odds.

Lt. David James Hughes. (France.)

A gallant and skilful officer. On Sept. 4th his patrol was attacked by eight Fokker biplanes. Proceeding to the assistance of one of our machines that was in difficulties, Lt. Hughes was himself attacked by two enemy aeroplanes and driven down to 4,000 ft., his petrol and oil tanks being shot through. By skilful manœuvring he regained our lines, pursued by one of the enemy, which, at 2,000 ft., he engaged, bringing it down in our lines.

Sec. Lt. Joseph Harold Huxley. (France.)

While on a recent contact patrol this officer displayed marked ability and courage. He left the ground in the early morning of Sept. 12th under very adverse weather conditions, heavy rain falling and a strong west wind blowing. Having reached his objective, he called for flares without success, and in order to locate our troops he was compelled to descend to 200 ft. In spite of very difficult ground he succeeded in ascertaining the position of a number of our posts. The flight lasted over three hours, rain falling incessantly, and in obtaining the information Sec. Lt. Huxley displayed a devotion to duty worthy of high praise.

Lt. (actg. Capt.) Ronald Ivelaw-Chapman. (France.)

This officer has rendered most valuable service in co-operation with our artillery. In these operations he displays marked skill and devotion to duty his keenness of observation being excellent. On more than one occasion he has carried out several successful shoots in one flight.

Lt. Wilfred James Pardo Jenner. (Sea Patrol, Flanders.)

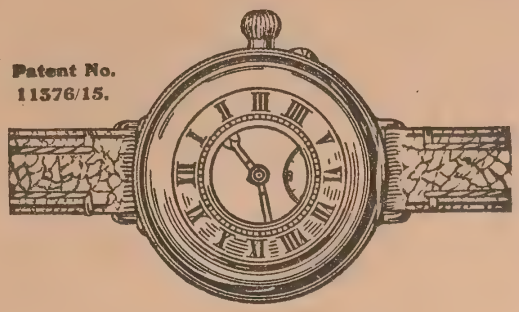
A bold and gallant officer, who has destroyed two enemy machines. On Oct. 4th, whilst on a low bombing raid, he was shot through both legs. Although suffering great pain, he, with great courage and devotion to duty, continued his flight and dropped his bombs on the objective before returning to his aerodrome.

Lt. Laurence Arthur Jessop. (Sea Patrol, Mediterranean.)

An officer of fine courage and resolution. He has rendered most valuable service in bombing an important enemy town on a long-distance raid, bringing back a valuable reconnaissance report.

(Owing to pressure on space it is necessary to hold over the remainder of this "Gazette" until next week.)

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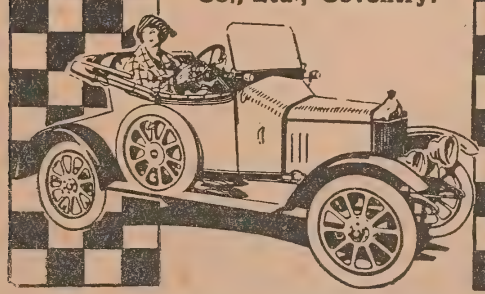
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FROM THE COURT CIRCULAR.

Buckingham Palace, Nov. 30th.

The Queen, attended by the Lady Mary Trefusis and Sir Edward Wallington, visited the Women's Royal Air Force at the Plane Repair Park, Royal Agricultural Hall, Islington, this morning

Admiralty Retirement and Appointment.

Nov. 30th.—Royal Naval Volunteer Reserve.—A temp. commn. as Lt. has been granted to C. Perrett (Capt., R.A.F.).

Nov. 27th.—Engr. Comdr.—G. W. S. Aldwell, placed on the Retired List, June 5th.

THE CASUALTY LIST.

NAVAL.

Reported Nov. 28th.

Previously reported Missing, now officially presumed Killed.—Flt. Sub-Lt. William A. Moyle, R.N.

MILITARY.

Reported Nov. 27th.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Aked, Lt. H. L. C., W. Yorks R., attd. R.F.C.; Brown, Sec. Lt. W. A. S., Arg. and Suthd. Highrs., attd. R.F.C.; Crabbie, Lt. W. M., R.F.A., attd. R.F.C.; Ellis, Lt. W. B., A.S.C., attd. R.F.C.; Goodson, Sec. Lt. A. R. L., Lond. R., attd. R.F.C.; Hunt, Lt. B. P. G., Yeo., attd. R.F.C.

Reported Nov. 28th.

Canadian Forces.—Died.—Duggan, Lt. G. W., M.C., Can. Cav., attd. R.A.F.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Burnie, Lt. A. I., Buffs (E. Kent R.), attd. R.F.C.; Cairnduff, Lt. A., R.F.C.; Crosbie, Capt. D. S. K., Arg. and Suthd. Highrs., attd. R.F.C.; Formilli, Capt. G. C., R.G.A., attd. R.F.C.; Gray, Capt K. W., Wilts R., attd. R.F.C.; Greenhow, Lt. M. W., W. Yorks R., attd. R.F.C.; Kemp, Lt. H. T., Ches. R., attd. R.F.C.; Knight, Capt. C. C., R.F.C.; Mansell Moullin, Lt. O., R.F.C.; Maxwell, Lt. G. E., R.F.C.; Porter, Capt. G. T., R.G.A., attd. R.F.C.; Scholefield, Lt. E. R. C., Lan. Fus., attd. R.F.C.; Slade, Lt. R. J., A.C.C., attd. R.F.C.; Spratt, Capt. N. C., R.F.C.; Weir, Capt. A. G., R.F.C.; Wilkin, Lt B. O., D. of Corn. L.I., attd. R.F.C.

Canadian Forces.—Leeson, Capt. D., B.C. R., attd. R.A.F.

The following officer, who was a prisoner in Turkey, has been released:—

Smith, Capt. S. C. W., E. Surr. R., attd. R.F.C.

Reported Nov. 29th.

Australian Force.—Died.—Cameron, Lt. C. C., F.C.

Pickering, Lt. G., F.C.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Alexander, Lt. E. H. E. J., K.O. (Yorks L.I.), attd. R.F.C.; Castle, Lt. J. S., R.F.C.; Eberli, Capt. F. H., R.G.A., attd. R.F.C.; Grantham, Lt. V. M., R.F.C.; Mortimer Phelan, Lt W. C., R.F.C.; Somervell, Lt. W. E., L.N. Lan. R., attd. R.F.C.; Stubbs, Lt. H. B., R.F.C.; Wilson, Capt. C. B., M.C., Hrs., attd. R.F.C.

Reported Nov. 30th.

Previously reported Missing, now reported Killed.—Banfield, Sec. Lt. C. B., R.F.C.

Canadian Forces.—Previously reported Missing, now reported Killed.—Orr, Lt. J. R., Cent. Ont. Regt., attd. R.A.F.

Died.—Henderson Lt. E. B., Cent. Ont. R., attd R.A.F.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Broder, Capt. P. A., Worc. R., attd. R.F.C.; Brown, Sec. Lt. C. H. R.F.C.; Clemens-Finnerty, Lt. H., Lancers. attd. R.F.C.; Griffin, Lt. R. T., R.F.C.; Griffiths, Lt. C. D., R. Welsh Fus., attd. R.F.C.; Grinnell Milne, Lt. D., R. Fus., attd. R.F.C.; Halford, Lt. E. A., Wilts. R., attd. R.F.C.; Jeffered, Capt. W. W., Middx. R., attd. R.F.C.; Leech, Capt. J. C., Hussars, attd. R.F.C.; Lerwill, Lt. O., R.F.C. Lindop, Capt. V. S. E., Leins. R., attd. R.F.C.; Long, Lt. H. O., R.E., attd. R.F.C.; McEwen, Lt. J. G., R.F.C.; Nichol, Capt. R. W., R.F.C.; Odling, Lt. V. G., R. Berks R., attd. R.F.C.; Pearson, Lt. L. J., R.E., attd. R.F.C.; Russell, Lt. A. L. R.F.C.; Sanford, Capt. S. A., Dragoon Gds., attd. R.F.C.; Tudor Hart, Lt. W. O. T., M.C., R.F.C.; Van Nostrand, Lt C. L., R.F.C.

Reported Dec. 2nd.

Australian Force.—Previously reported Died of Wounds, now reported Died.—Swaun, Lt. L. K., F.C.

Canadian Forces.—Accidentally Killed.—Logan, Lt. T. E., N.S. R., attd. R.A.F.

Mundy, Lt. C. R., Man. R., attd. R.A.F.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Geen, Lt. C., Lond. R., attd. R.F.C.; Harvey, Lt. E. B., Lond. R., attd. R.F.C.

Canadian Forces.—Davis, Capt. D. W., Sask. R., attd. R.A.F.

Reported Dec. 3rd.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Fryer, Capt. F. E., R.G.A., attd. R.F.C.; Hunt, Capt. R. E. B., Shrops. L.I., attd. R.F.C.

The following officers, who were prisoners in Austria, have been released:—

Goldie, Lt. G. N., R.F.C.; Gore, Sec. Lt. F. D. C., R.F.C.; May, Lt. L. B., R.F.C.

Casualties among Wt.Os, N.C.Os, and Men. The Dates are those of The Official List.

Nov. 22nd.—The following soldier, who was a prisoner of war in Turkey, has been released:—

Hampshire R., attd. R.F.C.—Haynes 305225 W. (Bournemouth).

Australian Imperial Force

Died.

Nov. 20th.—F.C.—Feild 787 G. W.; Maher 1477 E. J. L.

AIR FORCE.

Reported Nov. 29th.

Killed.—Arbuthnot, Capt. L. S.
de-Bathe, Lt. H. M.
Bowler, Sec. Lt. W. J.
Callender, Capt. A. A.
Evans, Lt. A. F.
Hodgskin, Lt. A. F
Knox, Sec. Lt. W.
Pike, Sec. Lt. F. W.
Reid, Sec. Lt. A. T.
Scholes, Sec. Lt. A. V., M.M.
Sharrock, Sec. Lt. W.
Sutherland, Capt. H.
Williams, Sec. Lt. S. H.
Woodcock, Capt. F., M.C.

Died of Wounds.—Rochfort, Lt. A. D'O.

Died.—Barnet, Lt. D. G.
Bauer, Capt. D C., D.F.C.
Carrigan, Lt. L. P. S.
Child, Lt. J. E.
Cole, Capt. C. C.
Evans, Lt. S. D.
Goodchild, Lt. V. G.
Johnson, Sec. Lt. R. W.
Kidd, Sec. Lt. J. A.
Pagdin, Lt. G.
Rutledge, Sec. Lt. W. T
Sherwood, Lt. F. C.
Spicer, Lt. E. A.

Wounded.—Alban, Lt. A. H.; Burslem, Lt F. G.; Richards, Lt. J. W.; Ricketts, Sec. Lt. H.; Russell, Sec. Lt. L. V.; Soothill, Sec. Lt. S.; Stevens, Sec. Lt. E. G.; Style, Lt. C. S.

Missing.—Cleghorn, Capt. W. F., D.F.C; Sibley, Maj. R. D. G.

Reported Nov. 30th.

Killed.—Armstrong, Capt. D. V.
Burt, Sec. Lt. J
Heslop, Sec.Lt. A. V.
Hinton, Sec. Lt. F. A
Lane, Sec. Lt. R. W.
Leckenby, Sec. Lt. J. G.
MecDonald, Sec. Lt. A. W.
Richardson, Lt. E. E.
Scott, Sec. Lt. E. S.
Whittall, Sec. Lt. G.
Wilson, Sec. Lt. J. M.

Died.—Bramham, Capt. E. S.
Brennan, Sec. Lt. D. P.
Cave, Lt. A. D.
Cilliers, Lt. G. P.
Dowse, Lt. H. H.
Gilfillan, Lt. A. W.
Harman, Lt. L. W
Harris, Lt. R. J.
Hitch, Lt. G. S.
Kemp, Lt. F. H.
Rigby, Maj. F. B.

Missing.—Cooper, Capt. M. L.

Previously reported Missing, now reported Wounded and Prisoners of War.—Carter, Sec. Lt. G. L.
Crawford, Capt. C.
Wood, Sec Lt. J. O.

Previously reported Missing, now reported Prisoners of War.—Bond, Lt. F. E.
Leighton, Lt. K. A. W.
Perring, Sec. Lt. J. H.
Pretty, Sec. Lt. R. C.
Rolfe, Lt. B. R.
Willis, Lt. N. D.

Prisoners of War.—Pineau, Lt. C. F., Stringer, Lt. F. H., D.S.C.

Reported Dec. 2nd.

Killed.—Abell, Capt C. E.
Baldie, Lt. J. B.
Faulkard, Sec. Lt. W. L.
Holmes, Lt. J. C.
Jones, Sec. Lt. E. B.
Lenihen, Sec. Lt. J. H.
Mees, Lt I. R.
Melling, Sec. Lt. H.
Royle, Sec. Lt. R. L. C.
Smith, Sec. Lt. F. L. P.

Drowned.—McConnell-Kerr, Capt. D.

Died of Wounds.—Clark, Sec. Lt. J. H.
Howard, Maj. G. R., D.S.O.
Nichols, Sec. Lt. J. J.
Smith, Sec. Lt. D. McQ.
Strange, Sec. Lt. H. S.
Thorn, Sec. Lt. H. J.
Wills, Lt. O B. W.
Woodland, Sec. Lt. G. H.

Cadets Killed.—French, E. V.
Kennedy, W. G.
Kettlewood, A. J.
Matthews, H. C.
Merrill, V. N.
Millard. S. H.

Reported Dec. 3rd.

Killed.—Bowler, Sec. Lt. H. C.
Fleischer, Sec. Lt. D. C.
Kinghorn, Sec. Lt. W.
Ruffridge, Sec. Lt. G. A.
Thomson, Lt. R. R.
Williams, Sec. Lt. A. H.

Died.—Aston, Lt. H. N.
Harrison, Lt. H. L.
Hook, Lt. G.
Jones, Capt. the Rev. G. W.
Lowe, Sec. Lt. H. A.
Pawson, Lt. G. St. V., M.C.
Pritchard, Sec. Lt. R. O.
Wilson, Lt. V. B.

Previously reported Wounded, now reported Died of Wounds.—Till, Sec. Lt. E.

Wounded.—Farncomb, Sec. Lt. H. F.; James, Capt. H. H.; Jenner, Lt W. J. P.; Langford, Sec. Lt. E. W., Sanderson, Lt. I. C.

Previously reported Missing, now reported Wounded.—Crichton, Sec. Lt. A. C.; Drummond, Sec. Lt. G. L. P

Missing.—Gadd, Sec. Lt. W. G.; Glew, Sec. Lt W.; Payton, Lt. C. W.

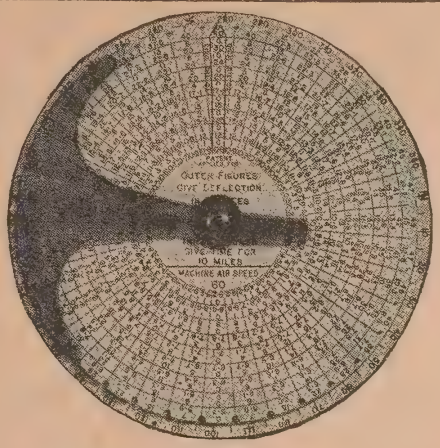
Previously reported Missing, now reported Prisoners of War—Arthur, Lt. T. J.
Foggo, Lt. N. O. M.
Gilmour, Capt. S. G.
Henderson, Sec. Lt. A. B.
Hopper, Sec. Lt. R W.

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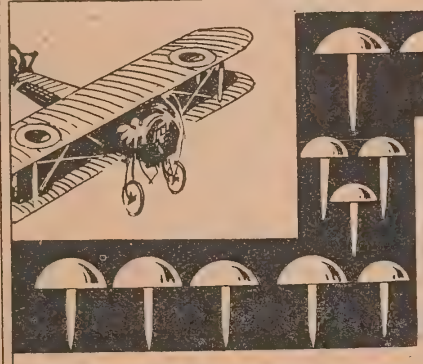
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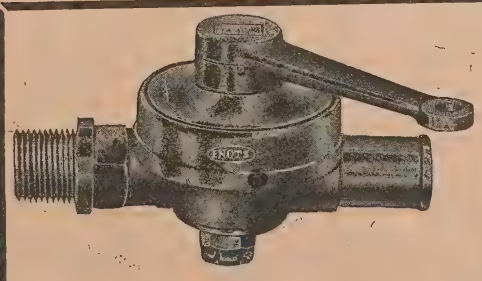
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PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONER OF WAR.—Macpherson, Sec. Lt. J. M.

CASUALTIES AMONG WT.OS., N.C.OS., AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED

Nov. 27th.—Beresford 62463 1st Pte. W (Coalville); Morrison 53460 1st Air Mech. A. (Dundee); Richardson 106385 3rd Air Mech. W. G. (London, N.W.).

Nov. 28th.—Baillie 115530 Air Mech., 3rd Cl., J. (Edinburgh); Gale 14782 1st Pte. W. J. (Roehampton); McKie 401121 Serjt.-Mech. J. (Riccarton) Sillance 27671 Air Mech., 2nd Cl, R. L. (Durstone).

Nov. 29th.—Brown 95747 3rd Air Mech. J. R. (Middlesboro'); Fleming 406429 2nd Air Mech. T. (Bootle); McCondach 13544 Serjt.-Mech. R. (Banchory).

Nov. 30th.—Cadman 91449 3rd Air Mech. C. (Ealing); Foster 93772 Serjt.-Mech. W. G. (Ditchling); Morgan 94601 2nd Air Mech. H. (Cacrau); Rutley 56945 3rd Air Mech. H. T. (Epsom); Sealey 56946 3rd Air Mech. L. (Isleworth).

DIED OF WOUNDS

Nov. 27th.—Hill 221241 1st Pte. H. (Acton, W.).

Nov. 28th.—Aldous 8775 Serjt.-Mech. D. T (Kessingland); Hill 5719 Air Mech., 1st Cl., E. (Holbeck); Luff 66561 Air Mech., 3rd Cl., E. W. (Tillington, near Petworth); Swain 55680 1st Pte. R. (Fulham); Urmston 134975 1st Pte. J. (Eccles).

Nov. 29th.—Chalmers 131748 3rd Air Mech. J. (Leven); Cryer 56684 3rd Air Mech. J. E. (Hampstead); Haigh 50212 3rd Air Mech C. B. (Halifax); Rutland 277728 2nd Pte. A. J. (Thornton Heath); Villis 43405 3rd Air Mech. T. (Tooting, S.W.).

PREVIOUSLY REPORTED WOUNDED, NOW REPORTED DIED OF WOUNDS.

Nov. 27th.—Newman 56359 3rd Air Mech M. G. (Peckham, S.E.).

DIED.

Nov. 28th.—Blease 67708 Air Mech., 3rd Cl., A. (Altrincham); Cheetham 29343 Air Mech., 2nd Cl., G. (Brockholes, near Huddersfield); Laughland 18487 Air Mech., 1st Cl., J. (Glasgow); Radford 86676 Air Mech., 3rd Cl., W. (Altrincham); Robinson 18897 Air Mech., 1st Cl., W. (Swindon); Strong 53917 Air Mech., 3rd Cl., E. W. (Gerrard's Cross).

Nov. 29th.—Ackroyd 38795 1st Air Mech. E. (West Kilburn); Banham 47720 1st Air Mech. J. A. (New Shildon); Bates 236183 1st Air Mech. H. (Chesterfield); Denton 125671 1st Pte. H. (Castleford); Flint 114380 1st Pte. O. (Liverpool); Hanford 144072 2nd Pte T. (Garth, Maesteg); Hirst 66571 3rd Air Mech. H. (Ilkley); Molyneux 35816 1st Air Mech. H. (Wigan); Ritchie 26141 1st Air Mech. W. (Perth); Simcox 133051 1st Pte. B. (West Bromwich); Smith 44344 3rd Air Mech. A. D. (Stamford Hill); Wilgoss 27535 1st Air Mech G. (East Carshalton).

Nov 30th.—Aingier 50550 2nd Clk. H. W. (London, N.); Dunnett 4920 1st Air Mech. H. J. (Paddington); Evans 21074 3rd Air Mech. S. (Chelmsford); Hurrell 96740 2nd Pte. G. W. (Bow, E.); Larkin 20151 1st Air Mech. H. (Loose); Leader 218251 1st Air Mech (Battersea); Lipscombe 16994 Cpl.-Clk. J. (South Hackney); McKinnon 22616 1st Air Mech. D. (Lockerbie); Park 2163 Ch. Mech. A. (West Heslerton); Watling 147254 2nd Pte. J. (Hartlepool); Woodrow 188925 Cpl. R. S. (Glasgow).

WOUNDED.

Nov. 27th.—Barker 83104 1st Pte. J. (Middlesbrough); Bartram 198903 2nd Pte. A. (Lenton Sands); Clarke 121616 2nd Pte. A. (Stockwell); Connolley 54605 1st Pte. S. (Chesterfield); Cullen 59268 1st Pte. J. (Mitcham); Cooper 23461 Cpl.-Clk. A. (Wolverhampton); Davies 86151 3rd Air Mech. D. R. (Cross Inn, Cardiganshire); Flather 99481 3rd Air Mech. H. (Mexboro); Greenfield 112764 2nd Pte. G. H. (Ackworth); Jackson 130655 1st Pte. J. (Canning Town); Jay 24925 Serjt.-Mech. W. (Denholm); Leighton 115245 1st Clk (actg. Cpl.) T. (Whitley Range, Manchester); Lindsay 217759 Serjt.-Mech. H. (London); Miller 59178 3rd Air Mech. B. (Highgate, N.); Moles 54812 1st Pte. J. E. (Leeds); Palmer 54754 1st Pte. L. G. (Battersea); Prince 235289 1st Pte. G. W. (West Ham); Silkstone 106261 1st Pte. S. (Greetland); Stadden RN/M2825 Serjt.-Mech. H. L. (Dundee); Stewart 105805 1st Pte. D. (Glasgow); Thompson 56944 3rd Air Mech. W. J. (Swindon); Tringham 27377 1st Air Mech. G. L. (Streatham Common, S.W.); Turner 35079 3rd Air Mech. A. V. (Higher Broughton, Manchester); Walker 106243 1st Pte. T. (Golcar); Warner 90263 3rd Air Mech. A. (London, N.1); Welbourn 75045 1st Pte. H. (Ossett); Whitfield 17680 1st Clk W. F. (Skewen); Woodhouse 120656 1st Pte. A. L. (Shiremoor); Woolard 44242 1st Air Mech. H. W. (Leyton); Young 87000 3rd Air Mech. F. M. (Wrodt).

Nov. 28th.—Baalham 142654 2nd Pte. H. (Chobham); Baker 96839 Air Mech., 3rd Cl., G. G. (Addiscombe); Bladon 53956 Air Mech., 3rd Cl., P. (Birmingham), Capper 96838 Air Mech., 3rd Cl., A. (Sheffield); Carpenter 58202 1st Pte. H. J. (Kentish Town); Goodall 8510 Air Mech., 1st Cl., B. J. (Wimbledon Park, S.W.); Kay 43404 Air Mech., 3rd Cl., A. (Grosvenor Square, London); Pilmer 112501 Air Mech., 3rd Cl., W. (Possilpark, Glasgow); Simpson 33457 Serjt.-Mech. H. (Longsight, Manchester); Skinner 111736 1st Pte. J. S. (Bethnal Green); Spencer 32962 Air Mech., 1st Cl., A. (Clapham).

Nov. 29th.—Bradley 52470 3rd Air Mech. E. (Newton Heath, Manchester); Deakin 15824 Serjt.-Mech. R. E. (Macclesfield); Francis 56157 3rd Air Mech. H. (Thornton Heath); Gilmour 55958 3rd Air Mech R. (Gourock); Goldshacker 58287 2nd Air Mech. J. L. (London, W.); Hinchcliffe 65093 1st Air Mech. G. (Keighley); Lakin 67688 3rd Air Mech. R. H. (Wednesbury); Mackay 104736 3rd Air Mech. G. (Fochabers); McCourt 105885 1st Pte. J. (Glasgow); Martin 64387 3rd Air Mech. H. A. (Upper Norwood, S.E.); O'Donoghue 903 Serjt.-Mech. J. H. (Stafford); Pollock 69855 3rd Air Mech. J. (Glasgow), Poulton 56786 3rd Air Mech. E. H. (New York City, U.S.A.); Ratcliffe 28080 1st Air Mech. A. (Bradford); Riley 81074 1st Pte. R. (Whittle-le-Woods); Scriven 59130 1st Pte. F. (South Norwood); Sier 55124 1st Pte. G. (Walthamstow); Staines 94704 3rd Air Mech. W. (Lennoxtown); Taylor 9034 1st Air Mech R Tilehurst); Thornton 116427 2nd Pte W. (Nottingham); Tonge 9020 Serjt.-Mech. H. (Mertyr Tydvil).

Nov. 30th.—Aylett 127775 2nd Air Mech. E. J. (Mile End); Barker 131435 3rd Air Mech. A. W. (Cambridge); Daniels 58199 1st Pte. C. P. (Petersham); Jackson 17598 3rd Air Mech. H. G. (Oxford); Jane 124489 2nd Pte. J. W. (New Barnet); Langley 134749 2nd Pte. G. A. (Battersea, S.W.); Pender 290794 2nd Pte. P. (Edenderry); Ramsdale 276021 2nd Pte. F. F. (Nottingham); Reid 82871 1st Pte. J. (Kirkcaldy); Wood 133064 1st Pte. T. (Glasgow).

MISSING.

Nov. 28th.—Bailey 3740 1st Pte. A F (Kettering, Northants); Fuller 175875 Serjt.-Mech. G. E. (Leeds); Scott 142733 Air Mech., 3rd Cl., J. A. (Ashington); Turner 128924 Serjt.-Mech. J. (Manchester); Walker 96465 Serjt.-Mech. R. (Glasgow).

PERSONAL NOTICES.

NAVAL.

DEATHS.

COLTSON.—Capt. Charles S. Coltson, D.S.C., R.A.F., son of Mrs. Reid, of Blenheim, Colchester, who died on Nov. 25th of pneumonia at the military hospital, Devonport, was educated first at the Abbey School, Beckenham. In September, 1909, at the age of 12¾, he entered the Royal Naval College, Osborne, as a cadet, and in the following year was made cadet captain. In September, 1911, he went on to Dartmouth, where he became chief cadet captain, and received the King's Gold Medal. He passed out fourth in September, 1913, and then joined H.M.S. "Cumberland" for a six months' cruise, and was chosen to receive the presentation dirk given to the cadet considered to have the best all-round influence and abilities. In March, 1913, he was appointed midshipman in H.M.S. "Hibernia" (flagship), and served with the Grand Fleet for two years.

In May, 1915, he was lent to the R.N.A.S. for special services, being stationed at Roehampton, Marquise (France), and Kingsnorth. In March, 1916, being promoted flight sub-lieutenant and sub-lieutenant, R.N., he was sent to Milton, Pembroke. He was promoted flight lieutenant in December, 1916, having been twice thanked by the Admiralty for valuable services rendered, and in October, 1917, he was awarded the D.S.C. for his services on anti-submarine patrol. In November, 1917, he was appointed to the R.N. air station, Mullion, until last May.

Last March he was promoted to lieutenant R.N., and in April was appointed to captain, R.A.F., and sent to R.A.F. Headquarters, Plymouth, for Staff work, which appointment he still held at the time of his death. Although only just 22 years old he held the second highest "record" in the Airship Service, having flown for 1,800 hours, a few hours less than the highest "record."

HUMBLE-CROFTS.—Capt. Arthur Maughan Humble-Crofts, R.A.F., died of pneumonia at the Military Hospital, Castle Mount, Dover, on Nov. 19th. He was the fourth son of Prebendary and Mrs. Humble-Crofts, and was born at Waldron Rectory, Sussex, in 1883. Educated at Eastbourne College and Keble College, Oxford, he joined the R.N.A.S. in 1915 as an A.B., and worked in the Admiralty Offices. In November, 1916, he got his commission, and was sent to Tynemouth, becoming lieutenant, R.N.V.R. in May, 1917. In the following August he went to Dover, and was working in part charge of the Naval Exchange for the R.A.F. at the time of his death. He married, in 1910, Miss Margaret Cooper.

TERRY.—Lt. Howard Terry, R.A.F., who served with the R.N.A.S. Armoured Car Section during 1914, died on Nov. 28th of pneumonia following influenza at his house, 236, Edward Road, Balsall Heath, Birmingham. He was 36 years of age.

* * *

Miss Margaret Cooper (Mrs. A. M. Humble-Crofts, widow of Capt. Arthur Maughan Humble-Crofts) desires to thank all her relations and her very kind friends for the telegrams, letters, cards, and flowers. At present Miss Cooper is confined to her house with an attack of influenza, and is, therefore, unable to attend personally to any correspondence.

MILITARY.

DEATHS.

CHILD.—Lt. J. E. Child, R.A.F., who died of pneumonia following influenza, at Lees Court Military Hospital, Faversham, on Nov. 3rd, was the eldest son of Mr. and Mrs. T. H. Child, of Leytonstone, and brother of the late Capt. J. M. Child, M.C., Royal Air Force. He was in the Territorial Artillery for seven years before the outbreak of war, and served with them until

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February, 1917, when he transferred to the R.F.C. He saw service in France and Italy, and came to England last August for a rest. He was posted to Throwley Aerodrome, Faversham, as one of the instructors, and while there contracted influenza, which resulted in his death. He leaves a widow.

EYRES.—Sec. Lt. Henry Tarrant Eyres, The Queen's Regt., attd. R.A.F., who was killed on Nov. 9th, whilst flying in France, was the younger son of Mr. and Mrs. Ernest Eyres, Orchard Lea, Bath. He was 19 years of age.

HODGSON.—Capt. Francis Herbert Hodgson, R.A.F., whose death was announced last week, was born on March 11th, 1896, and educated at Connaught House, Weymouth, and at Harrow School, winning an entrance scholarship in 1910 and the Roundell Scholarship in 1914. He won a Science Demyship at Magdalen College, Oxford, and went up in October, 1914. Intending to be a doctor, he started his medical training at St. Mary's Hospital in the summer of 1915, but joined the Beatty Flying School at Hendon in October, and on obtaining his certificate received a commission in the R.F.C. in January, 1916. Training at Brooklands and Croydon, he got his wings, and went to France in May, 1916, and acted as a pilot on artillery reconnaissance. In September he was severely wounded by a Fokker while on a bombing expedition. He was employed at Oxford during convalescence, and returned to France in June, 1917, where he served continuously till last May, being mentioned in dispatches in February. He was sent to Cambridge in May for a Staff course, and was offered a Staff billet; but in October, at his own urgent request and that of his comrades in France, he returned to the Front. He was slightly wounded on Nov. 4th, but did not leave his squadron, and was flying over the German lines at the moment of the armistice. He had just been appointed to command an independent flight of Bristol fighters to accompany the Army of Occupation to Germany, when he was accidentally killed in a trial flight on Nov. 19th at Elincourt.

MACKAY.—Capt. Duncan Ronald Gordon Mackay, 55th Squadron, R.A.F., late of 13th A. and S.H. and 19th R.F. (U.P.S.), died on Nov. 11th in France. He was taken prisoner while leading a raid and died of his wounds the following day. He was the younger son of the late Duncan L. M. Mackay, I.C.S. (retired), and Mrs. Mackay, Burnt House, Speldhurst, Kent. He was 23 years of age.

MILNER.—Lt. Eric Milner, R.A.F., killed in action on Nov. 3rd while on patrol duty near N.E. Valenciennes, was the only child of John H. and A. Milner, of Woodhouse, near Sheffield. Born in 1898, he joined the R.F.C. in July, 1917, and went to Egypt to train. Returning in May, 1918, as pilot, the ship he was in was torpedoed and he had a narrow escape. He arrived in England in July and went to France early in September. His observer, Lt. Coe, R.A.F., was also killed.

ORLEANS and WHITHAM.—The Secretary of the Ministry of Munitions regrets to announce that Capt. H.R.H. Prince Antoine of Orleans, M.C., A.D.C., Royal Canadian Dragoons, employed on liaison duties in the Ministry of Munitions, has died at Edmonton Military Hospital as the result of a flying accident on Nov. 26th. Prince Antoine was journeying by aeroplane from France to London with dispatches, when, owing to fog, his pilot was compelled to make a forced landing at Old Southgate. The machine struck a cottage, and the pilot was killed and the Prince severely injured.

Prince Antoine Gaston Phillippe François d'Assise Marie Michel Gabriel Raphael Gonzague d'Orleans was the third son of Prince Gaston, Comte d'Eu, by his marriage with Princess Isabella, of the former Imperial House of Brazil. He was thus a cousin of the Duke of Orleans. Prince Antoine, who was born in Paris on Aug. 9th, 1881, joined the British Army at the outbreak of war, and was posted to the staff of Gen. Smith-Dorrien, being transferred later to the staff of Lt.-Gen. Sir Charles Fergusson.

In December, 1915, he became Intelligence Officer to the Canadian Cavalry Brigade, under Major-Gen. J. E. B. Seely. In March, 1916, he became aide-de-camp to Gen. Seely, and served in that capacity till June last. When, in July, Gen. Seely became Deputy Minister of Munitions Prince Antoine took up a post in the Ministry also.

He received the Military Cross as an immediate reward for an act of exceptional gallantry on May 25th, 1917. While making a reconnaissance of enemy positions he was seen and subjected to violent artillery fire. He nevertheless with exceptional courage continued his reconnaissance to within about 400 yards of the enemy, and noted on his map exact information as to the locality and garrison. As a result, the attack was entirely successful. On many other occasions, and notably in the recapture of Moreuil Wood, on March 31st last, he showed great bravery under fire. He had been recommended to the French Military authorities for the Croix de Guerre for gallantry in the field a few days before the accident.

A verdict of "Accidental death" was returned at the inquest at Southgate on Nov. 30th on Lt. John Harold Witham, R.A.F., aged 26, the pilot of Prince Antoine's aeroplane.

James Maynard, a horse dealer, said he went into his paddock to feed his animals on Tuesday afternoon, when there was a thick black fog. There was a crash in the adjoining paddock. The witness climbed over the fence and found an aeroplane completely smashed, and Mr. Witham underneath quite dead. Near by was Prince Antoine seriously injured. Several minutes afterwards fire broke out owing to the ignition of leaking petrol.

Lt. Martin, R.A.F., produced the aeroplane log-book, showing that the machine was last flown at Treves on the previous Saturday and handed over as "O.K." The aeroplane was now a total wreck. It was evident that Mr. Witham got lost in the fog. Calculating that he was near his journey's end, he possibly descended to look for grass land, and seeing the paddock, attempted to land there. The paddock was only 80 yards across, and any attempt to land a large machine there would have been hopeless. It scaled the tops of several fir trees and dived into an earth bank.

Dr. Tipping stated that death was instantaneous. The Prince was removed to the Edmonton Hospital with all speed, where he died later.

The Coroner, Mr. A. M. Forbes, expressed sympathy with the relatives, and stated that as the evidence referred equally to Prince Antoine as to the pilot he did not propose to hold another inquest.

PAGE.—Capt. Lance St. A. M. Page, R.E. Kent Yeo., attd. R.A.F., was the son of the late C. W. H. Page and of Mrs Mary Page. He was senior Flt. Comdr. in his Squadron, and was killed whilst flying in Mesopotamia on Aug 20th, 1918. He had been recommended for promotion and a reward by his O.C., "for the good work he did and for his fearlessness and devotion to duty." He was twice mentioned in dispatches, once by General Sir Stanley Maude and recently by General Sir H. Marshall.

RAWLINGS.—Sec. Lt. B. Rawlings, M.M., R.A.F., previously reported missing on July 18th, now known to have been killed on that date, was the only son of Mr. and Mrs. Rawlings, of Vache Farm, Chalfont St. Giles, Bucks.

In September, 1914, he enlisted in the Seaforth Highlanders and went to France with the 51st Highland Division and served two years in France with that Division. He was twice wounded, the second time in the Arras battle on April 9th, 1917, when he was awarded the Military Medal. On recovery he obtained a commission in the R.F.C., and was trained as an observer. At the time of his death he was flying with Lt. F. N. Mollet, R.A.F., who was killed at the same time and buried with him by the enemy, who erected a cross bearing the date of their deaths. Mr. Rawlings was 22 years of age.

WALFORD.—Capt. William Geoffrey Walford, R.M.R.E. and R.A.F., who was killed in aerial action over the German lines on Nov. 4th, was the eldest son of Capt. William Walford, of Glanmonnow, Garway, Hereford. He had seen over four years' service.

Engagement.

VYVYAN—BIRRELL.—The engagement is announced between Capt. M. Vyvyan, M.C., R.G.A. and R.A.F., youngest son of Capt. and Mrs. H. N. Vyvyan, of Ennis Vear, Penarth, and Ruan Minor, Cornwall, and Fairy, youngest daughter of Col. and Mrs. John Birrell, Allander House, Milngavie and of Croftbank, Crail, Fife.

Marriage.

GIBSON-SMITH.—On Nov. 27th, at the Parish Church, Henley-on-Thames, Lt. Harold Kenneth Gibson, 3rd Tyneside Scottish, attached R.A.F., youngest son of the late A. E. Gibson, Esq., and Mrs. Gibson, of Newcastle, was married to Eleanor Mary, elder daughter of Dr. and Mrs. George Smith, of Longlands, Henley-on-Thames, by the Rev. S. Saunders, rector.

Births.

BLACKFORD.—On Nov. 26th, at Grantham, the wife (née Theobald), of Capt. D. L. Blackford, R. Fus. and R.A.F., of a son.

MACLAGAN.—On Nov. 24th, at 44, Moray Place, Edinburgh, the wife of Lt. James P. D. Maclagan, The Royal Scots and R.A.F.—a son.

SOUTHALL.—On Nov. 28th, at Reading Road, S. Farnborough, the wife of Lt. John Southall, R.A.F. (late R.F.C.), of a daughter.

TEMPERLEY.—On Nov. 27th, at Newcastle-on-Tyne, the wife of Capt. C. J. Temperley, Northern Cyclist Battalion, attached R.A.F., of a daughter.

* * *

Lt. E. T. Smart, R.F.C. (No. 2 Squadron), has been missing since March 27th, 1918, on the sector Bray-sur-Somme to Roye. If any repatriated prisoners can give information it will be gratefully received by Mrs. Smart, 20, Manor Grove, Tonbridge, Kent.

* * *

Sec. Lt. Donald C. Tucker, R.F.C., has been missing since March 24th, 1918. He was last seen far over the German lines flying in formation. Can any officer who was with him on that day, or in the 41st Squadron, also returned prisoner, give any information as to his fate? The information will be gratefully received by his parents, Durley Park House, Keynsham, Somerset.

* * *

Information is solicited regarding Capt. Alyn James, Denbighshire Yeomanry, attd. R.F.C., who has been missing since March 24th, 1918, on the Bray-Rosières Front.

Will any prisoners of war now returning from Germany or Belgium kindly give any information regarding Sec. Lt. Leicester F. Struben, 7th Dragoon Guards, attached R.F.C., reported missing on Nov. 16th, 1916, presumably in the Bapaume District? And kindly write to his father, Fred P. T. Struben, Spitchwick Manor, Ashburton, Devon, who would be deeply grateful.

AIR FORCE.

Deaths.

KIRTON.—Lt. Ralph Imray Kirton, R.A.F., who died on Nov. 22nd at the Cambridge Hospital, Aldershot, as the result of a flying accident, was the elder son of Dr. and Mrs. Charles Imray Kirton, Ashville, Honor Oak, S.E. He was 23 years of age.

NORMAN.—Lt. Alfred George Bathurst Norman, R.A.F., who was accidentally killed while flying in France on Nov. 20th, was the eldest son of the Rev. Harry Bathurst Norman, 10, Palmeira Square, Hove. He was 19 years of age.

VALLANCEY.—Robert Victor Vallancey, R.A.F., who died on Nov. 18th, at No. 12 C.C.S., of broncho-pneumonia, was the second son of Mr. and Mrs. Charles George Vallancey, "Montaure," Chandos Road, Cricklewood, N.W.2. He was 18 years of age, and had seen 2½ years' Active Service abroad.

WARNER.—Lt. J. W. Warner, R.A.F., only son of Mr. and Mrs. C. Warner, of Thorparch, Yorkshire, reported missing on October 4th, is now reported to have been killed in action. He had been awarded the Distinguished Flying Cross, and was officially credited with destroying eight enemy machines and shooting three others down out of control. He went to France last May with the squadron commanded by Col. Bishop, V.C., D.S.O., M.C., D.F.C. He was 19 years of age.

Marriages.

FALCK—STARLING.—On Nov. 23rd, at St. Michael's Church, Aylsham, Norfolk, Lt. Lionel Falck, R.A.F., was married to Kathleen Constance, youngest daughter of Mr. and Mrs. W. F. Starling, of Cedar House, Aylsham, Norfolk, by the Rev. Canon Hoare.

TILL—JOHNS.—On Nov. 23rd, at St. Mary's, Poole, Major Frederick Denham Till, Squadron Commander, R.A.F., of Ceylon, eldest son of Mr. and Mrs. Louis Till, of Twickenham, was married to Elizabeth Nesta, youngest daughter of the late Rev. Thomas Johns and Mrs. Johns, of Manor Owen, Pembrokeshire, by the Rev. Fr. O'Reilly.

Births.

BARNETT.—On Nov. 22nd, at Oak Cottage, Kersal, Manchester, to Winifred, wife of Capt. Egerton Barnett, R.A.F., of 22, Carlyle Square, Chelsea—a son.

DORÉ.—On Nov. 29th, at The Turret, Frognal, Hampstead, the wife of Lt.-Col. Alan Doré, D.S.O., R.A.F.—a daughter.

EVANS—On Nov. 27th, at 12, Moreton Road, Croydon, Nina, wife of Maj. A. T. Evans, R.A.F., of a son.

MERGARD.—On Nov. 29th, at 35, Burnt Ash Road, Lee, S.E.12, the wife of Lt. G. A. R. Mergard, R.A.F., of a daughter.

O'MALLEY.—On Nov. 29th, 1918, at "Canford," Canford Cliffs, Bournemouth, the wife of Maj. Harold O'Malley, R.A.F., second daughter of the late George Edwardes, of a daughter.

STEEL.—On Dec. 1st, at 3, Gainsborough Gardens, N.W.3, to May, the wife of Capt. Graham Strang Steel, R.A.F., a son, prematurely (stillborn).

STRUBELL.—On Nov. 28th, 1918, at 34, Albert Road, Regent's Park, Marnie, the wife of Maj. Trevor F. G. Strubell, R.A.F., of a son.

* * *

Capt. W J. Cairnes, R.A.F., has been missing since June 1st, 1918. He was last seen falling near Estairs.—Any information will be most gratefully received by William P. Cairnes, Stameen, Drogheda.

Sec. Lt. D. C. Collier, R.A.F., was reported missing on Aug. 24th on the Western Front, after a low bombing raid on the enemy infantry. Will anyone who can give any information or who knew him in the 89th Squadron in England please communicate with his sister, Mrs. McIntyre, Women's Legion, D Square, Stanhope Lines, Aldershot.

* * *

Lt. D. H. S. Gilbertson, R.A.F., who was reported missing on Sept. 4th, was last seen over Escaillon. Will the relatives of officers 70th Squadron taken prisoner that day please communicate with Mrs. Gilbertson, 5a, Montagu Mansions, W.1?

* * *

Any information regarding Lt. Jack A. Spilhaus, R.A.F., reported missing Sept. 4th, and last seen over Escaillon Aerodrome, 7 miles east of Douai, on machine No. d/9416, will be gratefully received by his father, C. F. Spilhaus, care of F. B. D., 110, Cannon Street, E.C.4.

* * *

Owing to illness, the marriage arranged between Capt. L. D. Dalzell-McKean, R.A.F., and Mme. Elaine de Majewska has had to be postponed.

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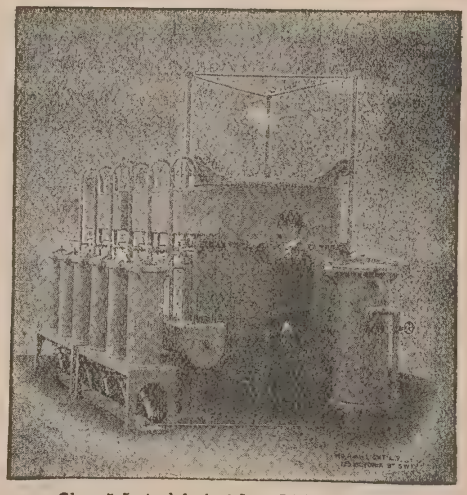
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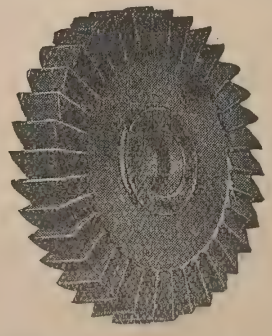
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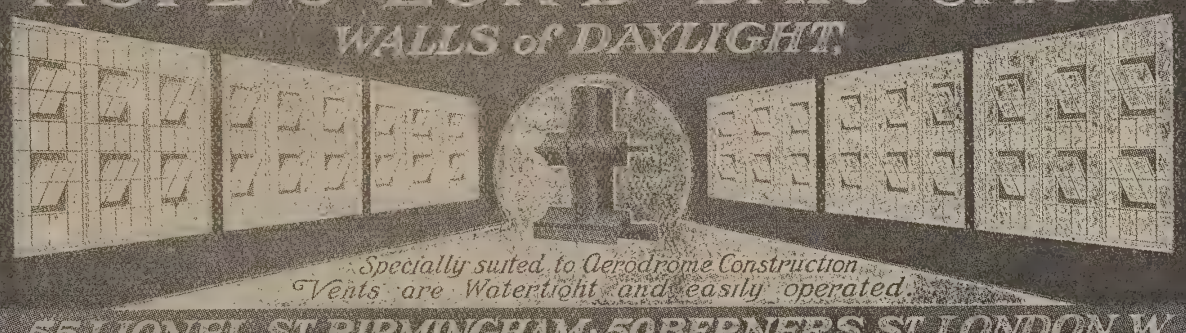
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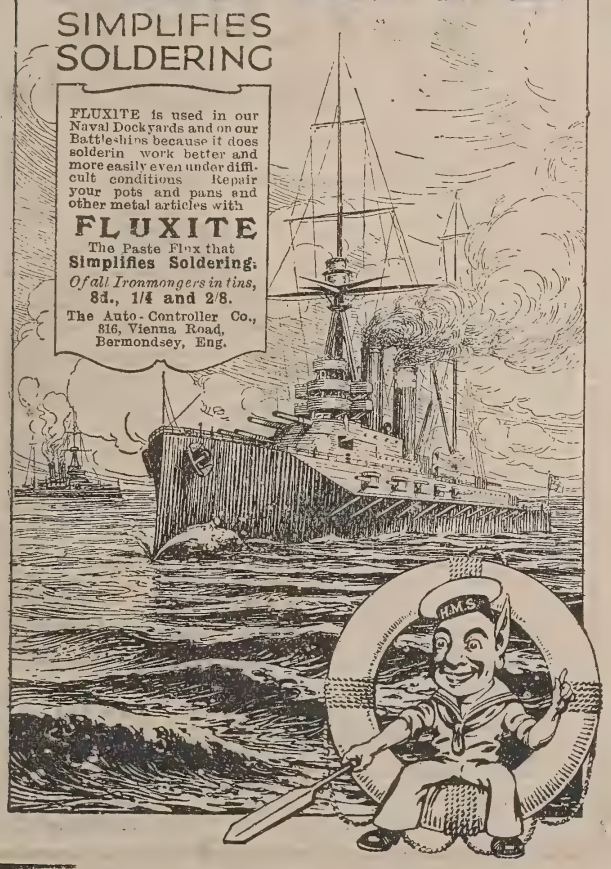
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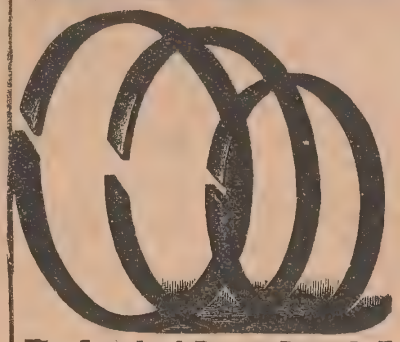
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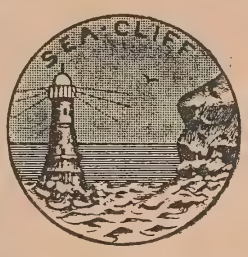
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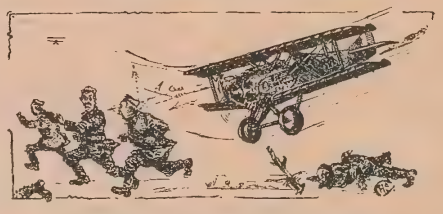
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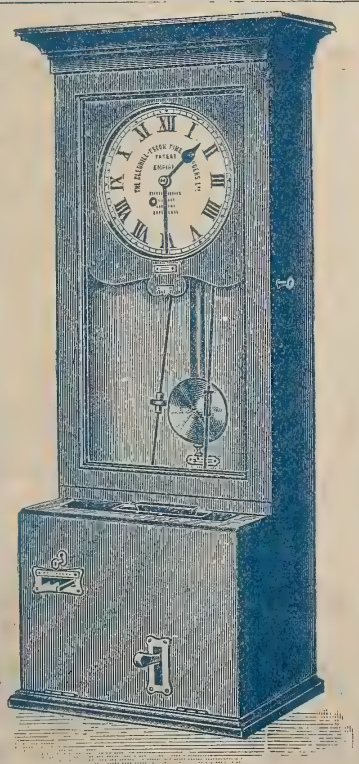
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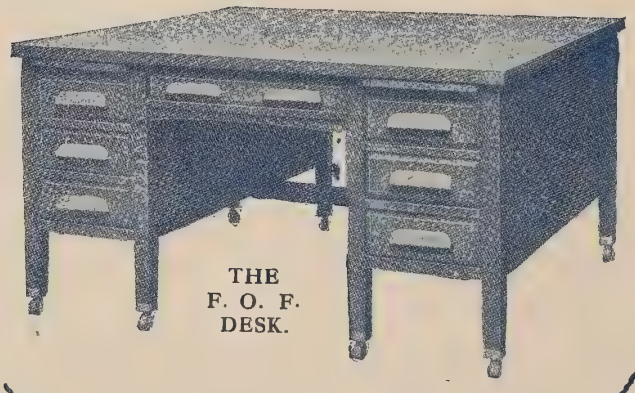
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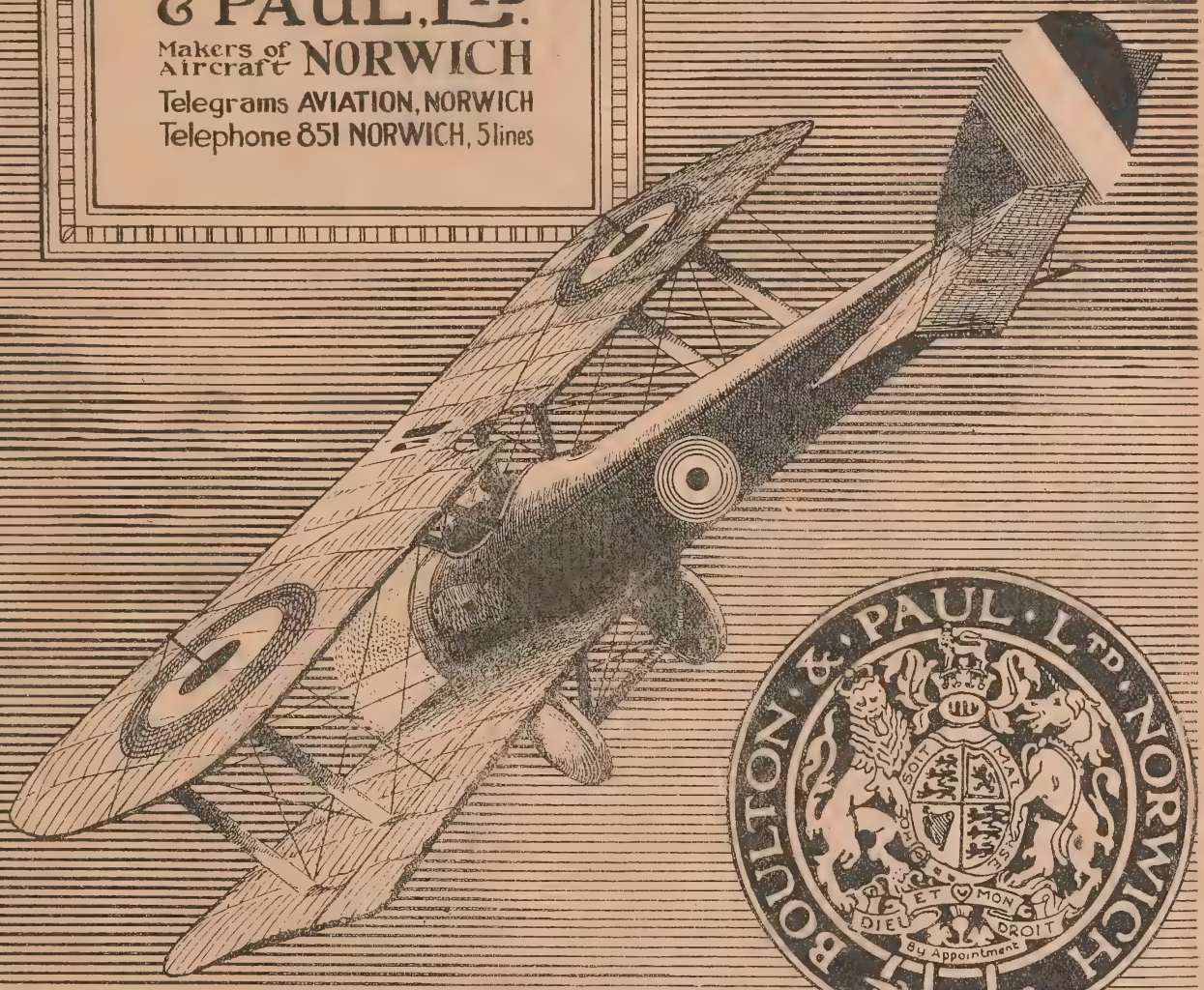
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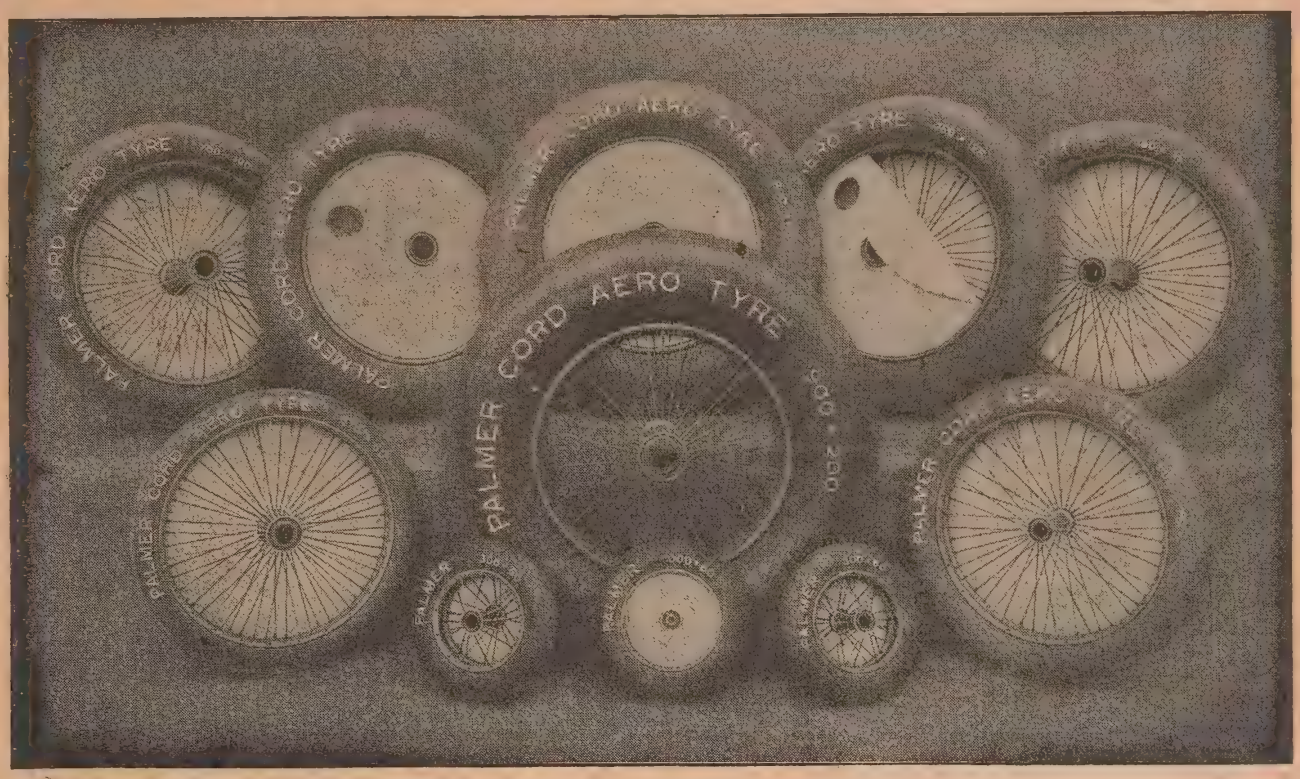
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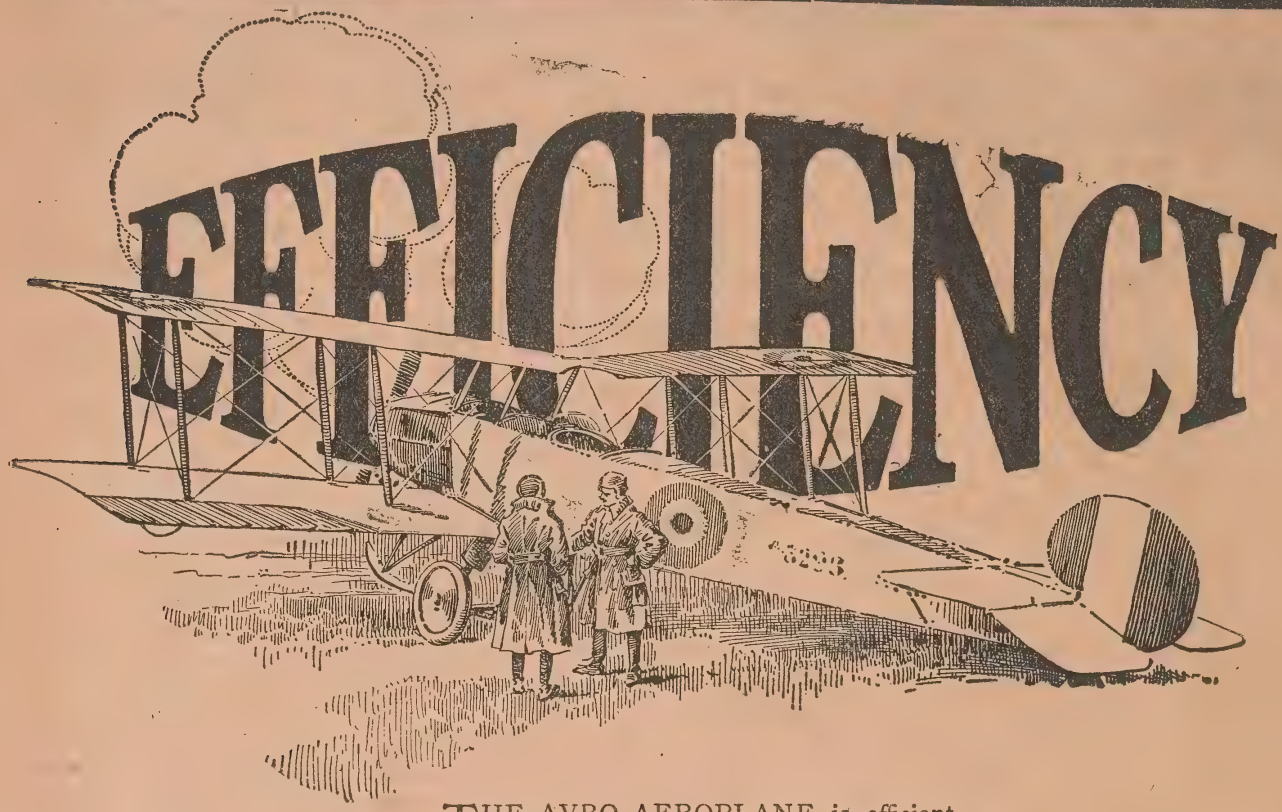
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ON THE AIR CANDIDATES.

The long-suffering readers of this paper have probably gathered by this time that one has no particularly high opinion of politicians of any party, nor even of those of no party. Still, a certain number of politicians are good for a nation, much for the same reason as that indicated by Mr. Artemus Ward when he said: "Some fleas is good for a dawg; they keeps him from broodin' on the fact that he is a dawg."

Just as there are, presumably, if one had the opportunity of studying their psychology, good fleas and bad fleas, so there are undoubtedly good politicians and bad politicians. When one sits in the Lobby of the House of Commons and watches the M.Ps. coming out to interview their constituents, one gets as fine a review of criminal types as one would get anywhere outside the Rogues' Gallery at Scotland Yard. One does not see the strong criminal countenance of the murderer and burglar, it is true, but the confidence-trick man, the three-card sharper, the gentle grafter, the quack-medicine merchant, and the smaller criminal types are thoroughly well represented, albeit disguised by good clothes, good feeding, and good schooling till they are only recognisable to one who has made something of a hobby of criminology.

Still, here and there among them one comes across an honest face, the face of the man who has quietly sacrificed his own self-respect and personal comfort in the hopes of doing good to the people, and the face of the fanatic who has had a similar "call" to sacrifice himself for the people. Also one sees the strong man who has waded into the cesspool of politics with the intention of clearing up some particular business in which he is interested. His may not be the highest motives, for at the last he is there in his own interests, but the man who is in politics for a purpose, open and unashamed, is at any rate honest. Which is not the case with the typical professional politician, who goes to his voters with the Sermon on the Mount as his election address and carries the Principles of Barabbas privily in his pocket as a guide to future conduct.

Thus the shipping people and the coal people and the railway people who are in the House of Commons purely in the interests of shipping and coal and railways are at any rate intellectually honest. And so it may well be with the various Air Force Candidates in the election this week.

The Need for Air Members.

Of those whom one knows personally not one is interested in any way in any aircraft firm, so that their hands are quite clean. They are going into the House—at least so one cordially hopes—for the benefit of aeronautics, and if the welfare of aeronautics brings benefits ultimately to them, they will have well earned their rewards. Meantime, Heaven knows, aeronautics will need quite a lot of nursing in Parliament if this country is to hold that superiority in the air which the Flying Services have won at the cost of so much blood and treasure.

The old Parliamentary Air Committee, with Mr. Joynson-Hicks as Chairman, and Lord Montagu and Major Alan Burgoyne as its moving spirits, did excellent work in its time and in its own way, but it had not, in the nature of things, that practical experience which was necessary to absolute success. It obtained a vast amount of inside knowledge second-hand, and used it to good effect, but when it came up against the plausible excuses or the semi-technical explanations of guilty officials there was none who could jump up on the spur of the moment and plug in one of those deadly supplementary questions which spread-eagle a Ministerial representative like a bomb dropping into an enemy aeroplane shed.

That species of work can only be done by the man who has been there himself and who knows, like "the toad beneath the harrow," "exactly where each tooth-point goes." And for that reason it is hoped that every reader of this paper who lives in, or has influence in, any constituency where an aviator, or anyone connected with the Royal Air Force, is putting up for election will do his or her best to help his election.

One is not in the least concerned about their minor political beliefs. So far as the various Parties are concerned, one is as bad as another. All lie cheerfully about what they are going to do, and none of them do it, so it really matters not at all whether an R.A.F. candidate is putting up as a Coalitionist, or a Conservative, or a Liberal, or a Labourite, or a Nationalist. So far as one knows, none are Sinn Feiners, and certainly none are Bolsheviks, and the rest of the various political creeds are all pretty harmless, and equally futile.

A Simple Argument.

The chief argument in favour of each of them is simply this:—Air Power is more necessary to the safety of this nation to-day than was Sea Power in the past. Great Britain is no longer an Island, and our Air Fleet must in future be our First Line Defence. Here is a man who has been in the War. He knows the practical business of Aeronautics from the inside. Put him into Parliament to look after the Air Fleet.

Can one want a better argument than that? Every sane person knows that all this drivel about Leagues of Nations and Universal Peace is pure unadulterated rot. Why! there is not a country in the world which, immediately on the declaration of the Armistice, did not break out into Bolshevism, or strikes, or riots, or did not take prompt and strenuous measures to prevent such outbreaks.

The declaration of Peace between the Nations will bring the world very much nearer universal war inside the nations than ever did the War itself. And if such internal war should break out even among the victorious nations, as it has broken out in Russia and Germany and Austria, then nothing will be more quickly conducive to Peace than a strong and efficient Air Force with which to break riotous mobs.

Which again is an excellent reason for sending R.A.F. Members into Parliament, so that they may strive against the cutting down of the Air Force in the manner which seems to be contemplated by our feeble politicians to-day.

The Tasks Before Them.

As a matter of fact, the R.A.F. as it is to-day is none too large for a Standing Force, but it is hopeless to expect that such a permanent establishment will be allowed. Therefore it will be necessary to fight hard to keep even a useful Force in being.

Also the Air Members—if any get in—will have to fight for the liberty of aviators in general. Otherwise flying will be killed by over-legislation, much as motoring was almost killed in its early days. That also is a big task, which will work out into all kinds of ramifications.

Therefore one commends them each and all to the good-will of the readers of this paper, and one hopes that such readers will help them wherever and however and whenever possible.

The Candidates.

It may be of interest to give a few notes on the careers of the Air Candidates. One does not profess to know them all intimately, but most of them have come within one's orbit in one way or another, and so one may perhaps be pardoned for giving one's readers a few personal impressions, in alphabetical order:—

Captain W. G. Aston (Paddington North).

Wilfred Gordon Aston hails from Birmingham originally. It was his family which gave its name to the Aston district, in the days when Aston Hall was a gentleman's residence and was not surrounded by evil industrialism. He is as near a genius as no matter. One has so far failed to strike a subject on which he is not merely informed, but well informed. He is an artist of distinction, a writer of ability, a capable engineer, a clever speaker, and the most argumentative person who ever lived.



Capt. W. G. ASTON (Paddington, N.).

In the year 1909 Wilfred Aston and the present writer in conjunction started "The Aero" for the House of Iliffe, and since then both have been deeply immersed in aviation in its various ways. He originated that descriptive style of detail drawing of aeroplanes which is now universally copied, and he had the great gift of being able to write and illustrate his own descriptions.

At the outbreak of the war he was making a very big income out of his writing and drawing, but he promptly enlisted in the infantry, and his articles in the "Daily Mail," signed "John Raw," describing the life of a Kitchener recruit, were among the best things of the day. After an amount of active service he was discovered—after considerable search—by the Mechanical Transport Authorities at the War Office and given a commission in the A.S.C. There he rose to the rank of captain, and, being invalided from active service, he was put onto staff work at home.

After a while he was discovered—again after some search—by the Aeronautical Authorities, and was commandeered for the Technical Department. The initials W. G. A. at the end of those brilliant descriptions of enemy aeroplanes which have been issued by the Technical Department, and published in this paper, indicate the origin of both text and illustrations.

Captain Aston can talk to the working mechanic, the artist, the soldier, the college don, and the aviator on their own levels, and one believes that, if driven to it by the free and independent voter, he can even talk down to the level of the ordinary M.P.

Major J. L. Baird, C.M.G., D.S.O. (Rugby).

Major Baird, Parliamentary Secretary to the Air Ministry, will presumably be re-elected for his old constituency, as he seems to have nobody of note up against him. This seems a pity, as he is the only Air Candidate, so far as one knows, whose room in the House of Commons would be preferable to his company.

One cannot trace any good that he has ever done to aviation, whereas there are numerous instances in which he has done harm, in the House by his incivility to questioners, his cheap attempts to score, and his distortions of the truth, and outside the House in speeches by his cheap cocksureness of manner and his misstatements of facts. Aeronautics in general, whether Naval, Military, or Civil, would be the better if Major Baird were not connected therewith.

Capt. Wedgwood Benn, D.S.O., D.F.C. (Leith).

Of Capt. Wedgwood Benn one knows nothing personally, though much by repute. His D.S.O. and D.F.C. bear witness to his good work in the war. He is a pre-war politician, but like all the Benn family he has a clean political record and a reputation for independence of character which distinguishes him from the ordinary politician.

Though too old to fly as a pilot, he won a very high reputation as an observer, both for the accuracy and skill of his work and for his continual gallantry in the face of the enemy. Being a Member of Parliament, he was automatically exempt from Military Service, if he had so desired, but his loyalty led him to do his duty as every able-bodied man should have done it.

As an active-service aviator of experience and as a very gallant gentleman, one wishes him well in his efforts.

Lieut.-Col. J. T. C. Moore-Brabazon, M.C. (Rochester, Chatham).

The name of Moore-Brabazon recalls ancient history to the old hands in aeronautics, for it was he who in the early days of 1909, on a Short biplane with a Green engine, won the "Daily Mail's" £1,000 prize for flying a whole mile round a closed circuit, without touching the ground,



Lt.-Col. J. T. C. MOORE-BRABAZON, M.C. (Chatham).

on an all-British aeroplane. That was the first great feat in British aviation.

Thereafter, when aviators' certificates were invented, by the Fédération Aeronautique Internationale, the Aero Club (not yet Royal) issued its Certificate No. 1 to Mr. J. T. C. Moore-Brabazon. So that this country has had the unique distinction of its No. 1 pilot flying on active service.

Somewhere about 1911 Mr. Moore-Brabazon, who, incidentally, is of the Meath family, gave up active flying, but remained in close touch with the game. On the outbreak of war he joined the R.F.C. and went through his flying courses as if he had been a beginner. After some time at St. Omer, then H.Q., R.F.C., he specialised on photography and proceeded to do work of very high value.

In no branch of flying has more remarkable progress been made than in photographic reconnaissance, and for that progress Colonel Moore-Brabazon is very largely responsible. It is commonly said that the photographic maps of the German Lines have saved the British Army more casualties than it has suffered. In fact, but for these maps, one doubts whether any attacks at all would have succeeded, for both our infantry and our artillery would have been working very much in the dark.

For his services Colonel Moore-Brabazon has been frequently mentioned in dispatches and decorated, and none grudge him his rewards. If in the House of Commons his quick Irish brain can give to unwilling or obtuse Ministers some of those enlightening glimpses of the truth which his photographs used to give to G.H.Q. in the Field, his election will have been more than justified.

Lieut.-Col. Alan Burgoyne (Kensington, N.).

Though not actually an officer in the R.A.F., Col. Burgoyne has already done so much for aviation as the moving spirit of the Parliamentary Air Committee that one is justified in including him in the list of Air Candidates. He has long been interested in aviation, and in the very early days drew forth the wrath of some of us by offering quite a handsome prize for the first aviator to fly across London from North to South, or *vice versa*, between London Bridge and Westminster Bridge.

In those days the maintenance of an aeroplane in the air was an extremely precarious proposition, and a smash in the middle of London would have done a great deal of harm to the reputation of flying. Consequently, the temptation to young and reckless aviators was not regarded with favour. However, nobody attempted the journey and no harm was done, and at any rate the offer of the prize showed the enthusiasm of Mr. Burgoyne as he then was.

As a Captain in a Kitchener Battalion Alan Burgoyne fought gallantly in the early days of the War, and was invalided home as totally unfit for active service. Subsequently as Major he joined the staff of Lord Montagu, who was then Inspector-General of Mechanical Transport in North-Western India, and with him he had much to do with the work of the R.F.C. on the North-West Frontier. Whenever he was at home, Major Burgoyne devoted much of his time to the betterment of the conditions of our active-service aviators.

On his final return from India, he was appointed in charge of the Priority Department of the Ministry of Munitions when he was promoted to Lieutenant-Colonel. His long and lively interest in aviation certainly entitles him to the support of everyone concerned in aeronautics. Also, he is a thorough sportsman, and deserves to hold the seat which he has filled so long and so efficiently.

Lieut. Wright-Burrows (Hackney, N.).

Mr. Burrows is not well known in the R.A.F., but one gathers that for the past two years he has served in the R.F.C. and in the R.A.F. as an Equipment Officer. It is said that in civil life he is a woollen cloth manufacturer, and his experience in this direction might at any rate make him a useful member of Parliament when R.A.F. subjects are under consideration in the House, especially when the eternal subject of R.A.F. uniform is being discussed, for one assumes that at the present rate it will be at least five years before the R.A.F. uniform is finally settled as to quality, colour, cut, and hardware ornaments.



Lieut. WRIGHT BURROWS, R.A.F. (Hackney, N.)



Lt.-Col. T. CARTHEW. D.S.O., M.C. (W. Ham, Silvertown).

LIEUT.-COL. CARTHEW (WEST HAM, SILVERTOWN).

Lieut.-Col. Thomas Carthew, D.S.O., M.C., is both a soldier and a lawyer. How he came to be a lawyer one does not know, but he is first and foremost a good sportsman, so one may forgive him for being a lawyer.

As a soldier in the long-before-this-war days, he served in West Africa, and in South Africa. Very early in this war he joined the R.F.C., and acquitted himself remarkably well, if only judging by his decorations. As a pilot he proved himself a brave man. As a squadron-commander he proved himself a leader of men. As a wing-commander he proved himself an administrator.

Since then he has become a staff-officer, and when one met him, not many weeks ago, at G.H.Q. (Advanced) R.A.F. he was waging war in his new job as cheerily and as thoroughly as he did in all his previous manifestations. Incidentally, he has a caustic wit, when necessary, which may well be turned to good account in the House of Commons on matters aeronautical.

One judges that on age and length of service he ought to be past flying, but the sporting spirit overcomes such trifles, and he flies for the love of flying when opportunity offers, and when flying affords a convenient means of locomotion. Also he is regarded as a peculiarly safe and knowledgeable pilot, otherwise one scarcely imagines that the Prince of Wales would have gone touring by aeroplane in Northern France with Colonel Carthew as pilot.

His mental and social standing make Colonel Carthew an eminently desirable representative in the House, so one wishes him luck.

LIEUT.-COL. C. L'ESTRANGE MALONE (LEYTON, EAST).

When he took up flying Colonel Malone was a very junior Lieutenant R.N., but the personal initiative and quickness of mind which forced him out of the Naval rut into the Naval Wing R.F.C., as it then was, quickly marked him out for special employment.

He learned to fly at Eastchurch in 1911-12, and soon turned out to be a pilot of unusual skill, and more particularly of unusual judgment. His flying of the twin-engined, three-tractored Short, commonly known as the "Field Kitchen," during Army Manœuvres of 1912 was a thing to make men marvel. Also he was one of the first, if not *the* first, in Europe to fly an aeroplane off a ship.

His mental qualities drew him to the Air Department at the Admiralty shortly afterwards, and there he remained till the outbreak of war. As soon as war broke out he contrived somehow to commandeer three cross-Channel packets, "Empress," "Riviera," and "Engadine," and, fitting them up as seaplane-carriers, he began a daring seaplane patrol of the North Sea, which culminated on Christmas Day, 1914, with the historic R.N.A.S. raid on Cuxhavn, for which many decorations were given, though not to the organiser and commanding officer of the show. And the Navy never repeated the raid, despite the panic it caused in Germany.

Subsequently he took "Engadine" and other ships to the Eastern Mediterranean, where he organised those astonishing raids by heavy aeroplanes across Palestine—200 miles of dry land, out and home—against the Hedjaz and Suez Railway. After something over two years at sea, mostly in the open areas infested by submarines and reeking with mines, he returned with undiminished nerve to the problems of organisation at home.

Since then he has been employed chiefly on Staff duty, and one believes that of late his work has been of an international nature.

Colonel Malone possesses immense foresight, great strength of character, and undefeatable determination. He has unusual organising ability, and a curious ability to make things happen as he wishes. All of which should go far to make him a success in politics. But above all he is a firm believer in the future of aeronautics, and therefore he is, from the aeronautical point of view, particularly desirable as a member of Parliament.



Lt.-Col. C. L'ESTRANGE MALONE (Leyton, E.)

. The .

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Mr. E. W. Petter (Bristol North).

Mr. Petter is distinctly entitled to be reckoned among the Air Candidates, in that he is Chairman of the famous engineering firm of Petters, Ltd., Yeovil, who are incidentally the proprietors of the Westland Aircraft Co. Therefore he is very intimately concerned in the welfare of aeronautics.

The Westland Co. have done excellent work during the War. Their workmanship has always been good, and the directorate has invariably displayed the keenest interest in the welfare of the workpeople, so that the firm may be regarded as a model of what the relations between employer and employee should be in the future. It is, one believes, the intention of the Westland Co. to remain in the Aircraft Industry after the War, and so naturally Mr. Petter must be keenly interested in aeronautics. Therefore one bespeaks on his behalf the interest of any readers of this paper in his constituency.

Lieut. Baldwin Raper (Islington).

One learns that Lieut. A. Baldwin Raper, R.A.F., is also among the candidates. One knows nothing of him personally, and one is not even aware whether he is an active-service aviator or merely an occupant of a chair at the Bolo House. Even in the latter case it seems worth while to support him, because he must have learned so much about how things ought *not* to be done that he may be extremely valuable in the House.

* * *

These few notes do not profess to go very deeply into the histories or characters of the various Air Candidates. One merely hopes that by demonstrating that the said candidates are good sportsmen who have given up some of the best years of their lives to the King's Service one may have induced some of one's readers to give that aid which makes all the difference between winning and losing a seat in Parliament.—C. G. G.

THE CIVIL AERIAL TRANSPORT COMMITTEE'S REPORT.

The Reports (Interim and Final, with Appendices) of the Civil Aerial Transport Committee were issued as a White Paper on Saturday last. Owing to the inordinate length of this document (83 pages) it is impossible to deal with it in one issue of this paper. Therefore it is proposed to deal with it serially in the following issues.

Even so it will be impossible to print the whole document *in extenso,* therefore readers who are interested in the problems of post-war flying are recommended to obtain the Reports and read them in detail. They may be obtained through any bookseller from the usual Government publishers at 9d. for the complete document, or for 11d. post free from the Aeroplane and General Publishing Co., Ltd., Union Bank Chambers, Carey Street, W.C.2.

AN APOLOGY.

The Editor of The Aeroplane having been away from business for the past two weeks owing to illness and a subsequent operation certain regrettable errors have appeared in the issues which have appeared during his absence. For these he tenders his sincere apologies to his readers.

The majority of the mistakes were of a minor nature, but a very serious error occurred in last week's issue which must be corrected. In the article on the manning of the Royal Air Force it was made to appear as if the official document quoted referred to pilots, whereas in fact nothing of the sort was intended.

The document referred throughout to airmen—*id est* in the official sense, to N.C.Os. and men of the R.A.F. Unfortunately, in an excess of zeal, to avoid the use of the objectionable word "airmen" in the "Daily Mailese" sense, a subordinate changed the word wherever it appeared to "aviator," and this was passed, without regard to the sense of the document, by those temporarily in charge of editing the paper. The error is inexcusable, and one can only apologise for it.

H.M.S. "FURIOUS."

A few details—such as they are—are at last to hand concerning H.M. Seaplane-ship, "Furious." The "Times" Naval correspondent who includes these details in an article published on Dec. 5th, is careful to remind one that they are only approximate in accuracy. However, one gives them for what they are worth. Length, 800 ft.; displacement, 30,000 tons; speed, between 30 and 35 knots. At any rate, in comparison with certain other seaplanes' ships, H.M.S. "Furious" has quite a good turn of speed. She was one of the ships included in Lord Fisher's building programme of autumn, 1914.

CAIRO TO BAGDAD.

On Nov. 29th, Maj.-Gen. W. G. H. Salmond, R.A.F., Brig.-Gen. Borton, R.A.F., and Capt. Ross Smith, A.F.C., with two air mechanics, started off from Cairo in a Handley Page machine and arrived at Damascus the same afternoon.

On the next day they started again from Damascus at 7.25 a.m. and flew to Bagdad, which they reached at 3.30 p.m on Dec. 1st.

During August last Brig.-Gen. A. E. Borton, D.S.O., flew in a Handley Page biplane from England to Cairo. Starting from Lincolnshire he landed at a Kentish aerodrome to pick up Major A. S. C. Maclaren, M.C., and two mechanics. The flight, one of roughly 2,140 miles, lasted five days.

THE R.A.F. CLUB.

One gathers that there is a considerable amount of dissatisfaction and doubt in the minds of the officers of the R.A.F. concerning the fate of the large sum—to wit, £100,000—presented by Lord Cowdray for the formation of an adequate club for the officers of the R.A.F.

It appears that this money was presented by Lord Cowdray with the idea that the R.F.C. Club should change its name so as to include the whole R.A.F., and should be enlarged so as to offer the necessary accommodation for the enormous number of officers belonging to the Air Force. So far as one can gather, the committee of the R.F.C. Club has not been consulted as to the disposal of the money at all, but some individual or other in the Hotel Bolo has assumed control of Lord Cowdray's gift, and is apparently proposing to deal with the whole matter in an entirely arbitrary manner.

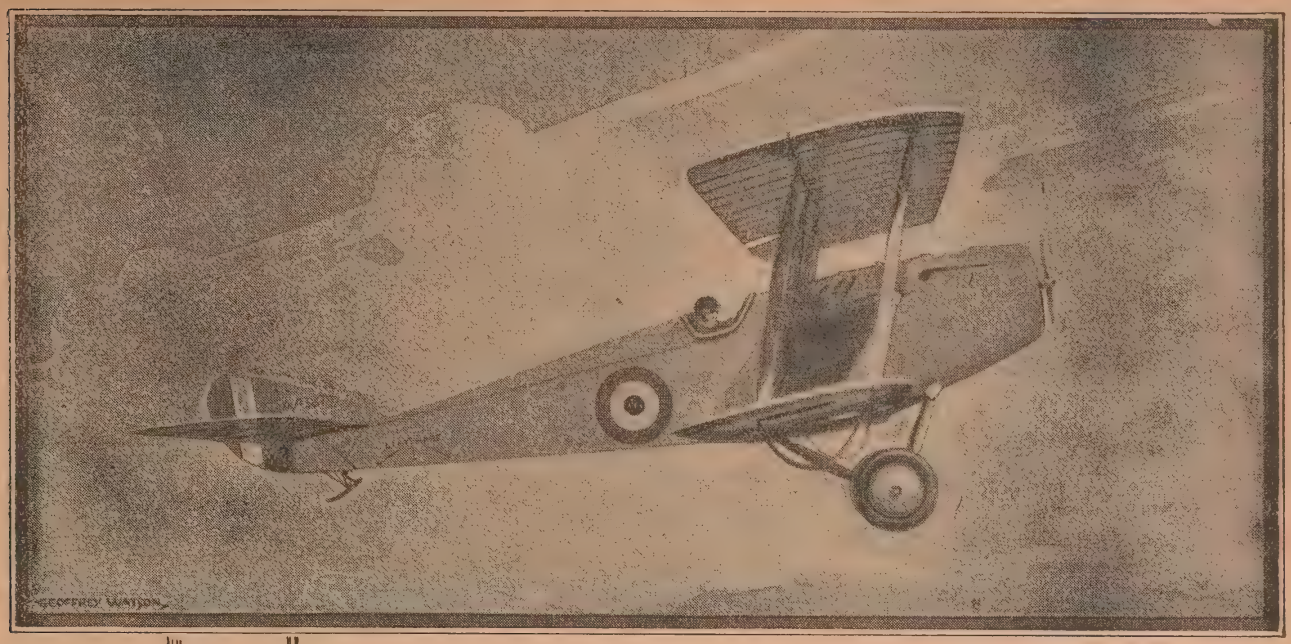
A notice has been issued that the R.F.C. Club will close on Dec. 31st, and that the R.A.F. Club will open early in the New Year. This means, of course, that the officers of the Air Force will have no habitation during just that particular time of the year when an Air Force Club would be of the greatest value.

This action on the part of the individual or individuals who have assumed control of Lord Cowdray's gift seems not merely unjust to the members of the R.F.C. Club, to whom the money was actually given, but extremely ill-advised in the interests of the Air Force, and an impertinence to the donor of the fund. Obviously, the whole matter should have been dealt with by the committee of the R.F.C. Club, and one gathers that a meeting is being held this week at the R.F.C. Club in order to discuss the question.

Obviously, the proper thing to do in the meantime is for the R.F.C. Club to remain open until the new R.A.F. Club is ready, so that the members can simply walk across from the old premises to the new, and the arrangement of the new club should be placed in the hands of a committee composed of the present committee of the R.F.C. Club plus an equal number of the R.N.A.S., so that the two services can be fairly represented on the new committee. When the new club is in working order it will then be possible for the members to elect an entirely new committee according to their own choice.

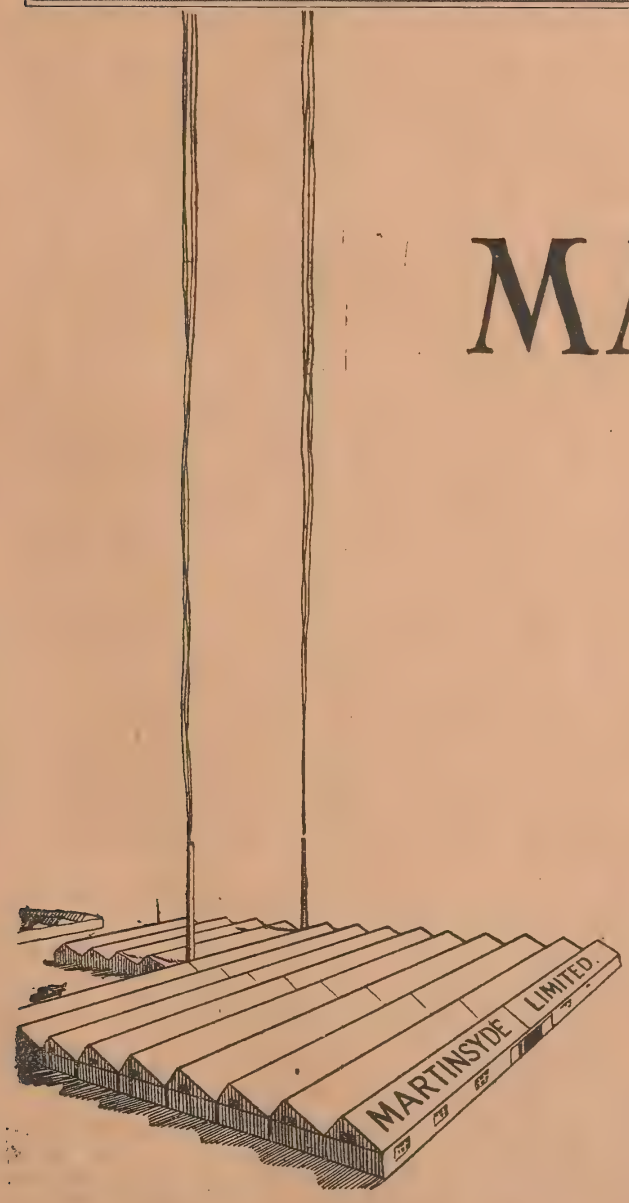
ARMORIAL BEARINGS OF ORDERS.

The King has been graciously pleased to grant to the Companions of the Order of the Bath, Star of India, St. Michael and St. George, and Indian Empire, to whom His Majesty recently granted precedence as Commanders, the privilege of surrounding their armorial bearings with the circle and motto of their respective Orders and to suspend therefrom a representation of their riband and badge.





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TO TRACE THE MISSING.

The Secretary of the Air Ministry made the following announcement regarding missing officers and men of the Royal Air Force on Dec. 6th :—

Every effort is being made to trace officers and airmen who have become missing from time to time and of whom no further information has been received.

Relatives and friends having any information concerning individual officers or men are requested to forward it to the Air Ministry, when every effort will be made to locate the officer or man concerned, but it should be appreciated that owing to the varying circumstances in regard to cases of missing personnel, some considerable time must elapse before information of a satisfactory or conclusive nature can be received. Relatives are, however, assured that when any definite information is obtained it will be transmitted to the next-of-kin immediately.

THE OPINIONS OF THE CROWN PRINCE.

The following is an extract from an alleged interview with the German Crown Prince given by the correspondent of the Associated Press and published in the papers of Dec. 5th :—

Speaking of air raids on unfortified cities, the Prince said he always entirely disagreed with these policies.

"The air raids on London and other towns and the big gun bombardments of Paris were useless from a military point of view, and, in fact, silly. As regards air raids, I suggested two years ago an international agreement confining air activities to the actual war zone, but my opinion was entirely disregarded. I was told my job was to command armies."

BRAVERY DURING AIR RAIDS.

Sir John Dickinson, at Bow Street Police Court, on Saturday, Dec. 7th, presented Inspector Harding, Sub-Div. Inspector Hamilton, and Station Police-Serjts. Jackson and Gaine each with £10, and Police-Constables Maisey and Trindes with £8 each from the Reward Fund, in recognition of their praiseworthy action on the occasion of an air raid.

By the efforts of these men several lives were saved from houses which had been either damaged or destroyed by bombs.

ANOTHER ESCORT.

It has been unofficially communicated to the Press that another aerial escort was provided by the Royal Air Force upon the occasion of the return journey of the President of the French Republic and Marshal Foch, one formation flying over their train from Victoria Station to Dover, and another escorting the destroyer which conveyed them over to France.

ANTI-AIRCRAFT DEFENCES.

From May 25th, 1917, the attacks made upon England were carried out by aviators belonging to the 3rd Bombing Squadron, German Flying Corps. The squadron, comprising about 30 machines, was stationed in flights at St. Denis Westrem, Gontrode, and Mariakerke aerodromes, in Belgium.

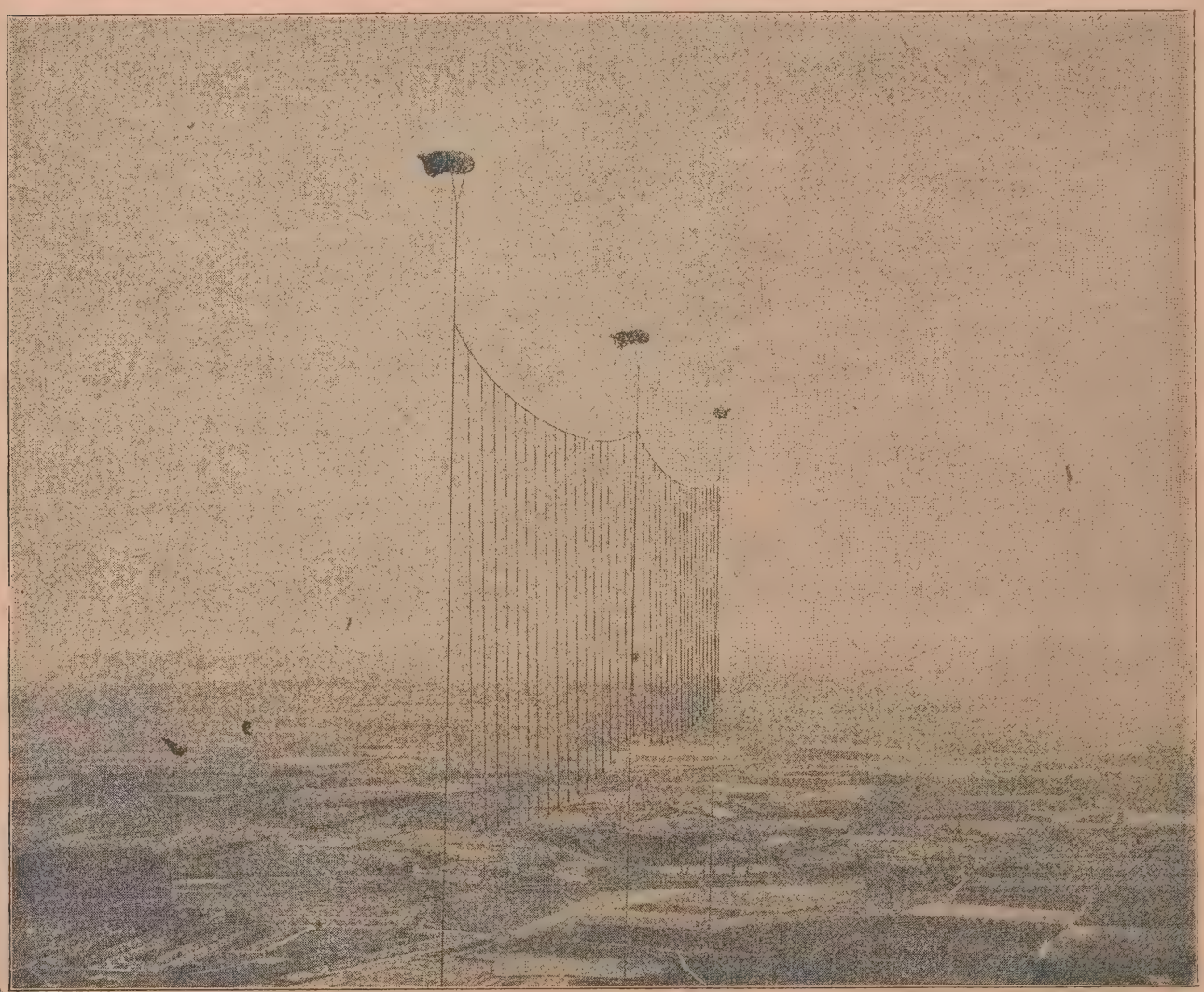
Hauptmann von Brandenberg was in command until he broke a leg whilst flying to headquarters to be decorated, and Hauptmann Kleine, a stern disciplinarian of proved courage, took his place.

Kleine carried out as many raids on England as was possible, but was killed over Ypres on Dec. 12th, 1917, Ober-Leut. Walter then taking command. He was only in charge for a few months when von Brandenberg returned and took up his former position as commander of the squadron, which he retained until the signing of the Armistice.

The L.A.D.A. had instituted many devices for bringing down hostile aircraft which raided England, many of which were highly successful. Kite-balloons—minus baskets—were let up in groups of three, to various heights and in many places, from which were suspended many long strands of thin steel cable.

There is evidence that some German machines were destroyed by this method, and, also, the moral of the raiding aviators was enormously affected. The enemy had no idea to what height the balloons would ascend, nor the exact positions in which they were to be found.

Besides which, raiding aircraft had to contend with an intense artillery barrage fire, defensive aeroplanes, unsuitable weather, and also the continuous bombing of their aerodromes by British aviators. Under these circumstances, it is not surprising that attacks on England ceased after the Whit Sunday raid in May last.—R. M.



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THE MEDICAL ASPECT OF AVIATION.

The war has considerably developed aviation, in its various branches, but especially so from the medical aspect. The importance of studying the mentality and psychology of aviators has now been recognised by the Military doctors, as it is realised that the actual piloting of a machine requires more than just physical fitness. A really good pilot requires a certain temperament, certain distinctive psychological characteristics.

The discovery and classification of these characteristics has for a long time been the subject of exhaustive study and investigation by the Medical Service of the R.A.F. This work is, of course, additional to the specialised physical examination which all applicants for the Royal Air Force undergo, and which in itself is a very carefully devised test.

It was found that in some cases men of perfect physique—apparently quite free from nerves—failed entirely to make even passable pilots. This discovery led to the formation of a special "medical flight," where such pilots have been able to work under good medical supervision, the cause of their failure ascertained, and, wherever possible, remedied by special treatment.

During the first months of the war, the selection of pilots was necessarily a question of those with general fitness passing the examination. After this stage, a careful medical and physical investigation was made of the R.F.C. pilots comprising the first five squadrons which went to France. From the results of this investigation, the preliminary data as to the necessary physical qualifications of a successful pilot were obtained, and now form the basis of the standard required by the present R.A.F. Medical Board at Hampstead, by which all aviation candidates have to be passed.

Later on, an investigation on similar lines was made as to the characteristic mentality of these same pilots, and with the information thus collected, the medical flight began its important work.

One of the first mental qualifications required by a good pilot is keen alertness. Action must follow thought with great rapidity. To determine capacity for this, certain tests known as re-action tests are applied. One of the simplest of these is the light test. An electric lamp is suddenly switched on, and the flying officer is told immediately he perceives it to press a key. By this means the time, to the thousandth part of a second, is measured which elapses between the lighting of the lamp and the action of the pilot which follows it.

But mentality is not the only factor. The emotional element is also important, and is the basis of another series of tests depending upon blood pressure for their accurate recording.

For instance, fear has certain known effects upon blood pressure; as also have anger, and other emotions. It is not desired that a pilot should be without fear. But what is important is the effect of fear upon the individual. It has two very different effects upon different organisms—paralysis and stimulation. Obviously, the flying officer must be capable of fear and stimulation, and by means of various instruments—combined all along with a close, expert study of the psychology of the pilot under his care—the doctor gauges his temperamental suitability for flying.

For many months this important work has been going on, and quite apart from its immediate military use, the statistics, and experience so gained, will be of great value in settling the physical, mental and emotional standards of the commercial pilot of the future.—R. M.

CONDITIONS IN GERMANY.

Mr. H. Warner Allen, writing from Nancy, on Dec. 3rd, says in the "Daily Express":—

Five British aviators who have just come into Luxemburg from a prison camp had suffered for two years everything it was possible to suffer from the cruelty of a people who set out to conquer the world and who to-day, being conquered, are trying to escape their just punishment.

They had tramped most of the way by little maps which had been secretly made with the aid of a camera from German maps. In 26 hours they had tramped 52 miles, carrying very heavy packs. They had taken with them all the food they had been able to save from their home parcels, not so much to eat themselves as for the purpose of bribing disagreeable Germans.

On one occasion an official refused to let them go to an hotel. They went to a sentry and gave him a cake of soap, an article of untold luxury. The man went at once to the official, tapped him familiarly on the arm, and told him that these Englishmen must be allowed to go to an hotel, and his word was instantly obeyed.

A CASE FOR DR. BARNARDO.

From the "Times" newspaper:—

Can anyone suggest how homeless R.A.F. Captain can spend cheery Christmas in or near London?—Write Box V.402, the "Times."

R.A.F. BOXING.

Colonel and Alderman Sir Charles Wakefield has presented two trophies of the value of 50 guineas each, for annual competition in boxing among officers and men of the Royal Air Force.

ANOTHER DEFENCE.

If there is one man's outlook on life I envy more than that of any other, it is the Naval officer's. Things must appear so very simple to him. Having dealt only with Naval matters since childhood, it is but natural that as he grows older nothing but Naval matters count.

When the R.N.A.S. was the R.N.A.S., run by Naval and Royal Marine personnel, even the Admiralty saw fit to claim it as part of R.N. It was not until—owing to the war—civilians began to join up in large numbers, that the Navy began to feel a little tired of the somewhat undisciplined result.

Doubtless had there been no war, and in consequence no civilians in the R.N.A.S., the Naval officer would, in course of time, have proved the R.N.A.S. to his own satisfaction, and, outgrowing his slightly contemptuous tolerance, would have received the personnel as brother-officers.

After all, it is better to look upon a new thing with suspicion, or utterly ignore it, until it has proved its worth, than stake one's all upon it—and lose. And the Navy merely did the former.

Undoubtedly the Navy might have won a much greater victory over that great little tin god Precedent if those at the Admiralty had not only been a little more farseeing, but also had had the courage of their juniors' convictions. But, on the outbreak of war, considering how tight money for armaments was, and the amount of cotton-waste at the Admiralty, the Navy had not done so badly with its newest military branch.

It was after the declaration of war that things went wrong, when Active Service people went on Active Service instead of staying behind to look after things; and politicians, who knew nothing of aviation, and would never learn, took charge at home, and began to interfere with Service matters and methods.

The R.N.A.S. had never proved itself in war. The old Navy had, again and again. But the Old Order changeth—and the Navy awoke to find all its preconceived notions of warfare lying in ruins. Followed of necessity readjustments and alterations, and, self-preservation being the first law of Nature, the R.N.A.S. was lost to sight and left to fend for itself.

This was unfortunate, for a few young N.Os. of the right type at that time might have saved the situation.

Instead, the Air Service was forced to make up its strength with the earnest, keen civilian. But earnestness has sometimes proved the curse of aviation, and keenness does not make up for lack of training.

When the Navy had time to consider the R.N.A.S., the unconventional doings of this unfortunate Service had already drawn unwelcome journalistic attention to it.

While the Navy thoroughly understands the art of dignified advertisement, this sort of thing was not to its taste. One could feel the disapproval, and almost see the raised eyebrows. Even Naval officers lose interest in things they cannot understand. The Admiralty could have saved the situation; they chose to ignore it.

And yet one does not blame the civilians; some of them have done very well; some of them have become Naval officers. But the majority might have done so very much better as the Imperial Air Service, or some such thing, entirely unconnected with either the Navy or the Army.

All of which must have been exceedingly unpleasant for the "pukka" R.N. officer who helped to form the R.N.A.S. Seeing clearly the enormity of the crime committed by his Service, able to appreciate and even sympathise with the attitude of the ordinary Naval officer towards the Air Service, yet his allegiance was to the R.N.A.S., and it was by that Service he stood during all the "Bad times."

And his reward? A temporary commission in the R.A.F.—that most comic of all comic Services—with the possible addition of a few useless medals.

The wonder of it is that when the Admiralty—but not the Navy proper—went back upon these men so badly in April, 1918, they did not throw down their hands in disgust. But seven years of the best part of a man's life spent with the R.N.A.S. is not likely to fit him for the ordinary Naval routine.

Everything progresses, and in seven years or so—especially when four of them were war-years—the changes in the Navy must have been great. And particularly must they have been so in the Destroyer section, from which so many of the original R.N.A.S. came.

So they stayed with the R.A.F. Because when a man is over 30 it is not easy to re-learn one's trade.—S. F. B.

THE NAVY AND AVIATION.

Congratulations to "R.S.D.," H.M.S. "Inflexible," on giving such a perfect example of the third stage of a "gun-room argument." A Naval officer who writes an abusive letter, and has not the courage to sign his name to it, is certainly the right person to defend the British Navy.

THE GERMAN AIR MINISTRY.

A decree establishing a Federal Air Ministry has been issued at Berlin. Herr August Euler, of Frankfurt, is to be placed in control with the title of Under Secretary of State.

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A NOTABLE AIRSHIP VOYAGE.

Some little time ago it was decided to purchase an airship—of semi-rigid type—from Italy in order to obtain experience in a design which is little known in Great Britain. Therefore, a crew, comprising three officers and six ratings belonging to the R.A.F., was sent to Italy to fly the airship to England.

They left Rome at 4.25 in the morning of Oct. 29th, and made off in the direction of Marseilles which they intended should be the first stopping-place. After a flight lasting 10 hours and 25 minutes, which was completed without incident—except that very bumpy weather was experienced over Civita Vecchia, and later on a rain-storm was encountered—Marseilles was reached.

Unfortunately, there was no shed sufficiently large to house the airship; it was, therefore, moored in the open. The crew then had the task of replenishing the fuel supply, and as very little outside assistance was available, it was a laborious task. However, at 2.50 a.m. (Oct. 30th), a start was made to complete the second stage of the journey, but there was a head-wind, against which they made poor progress. It was not very long before one of the engines gave out, but the other two were run at full pressure, and half an hour later the third was re-started. The weather conditions were sought by wireless, but no reply was received.

The airship kept on towards its objective, Paris, but the strength of the wind increased, and there was not sufficient petrol to complete the flight. Therefore, the crew turned back and again landed, after being 9 hours in the air, at a French aeroplane station. There were more troubles there as the ground staff were not used to handling airships, and, therefore, were not of very great assistance.

However, by the hard work of the crew, 300 tubes of hydrogen were put into the envelope and 307 gallons of petrol were taken on board. All this time the airship was moored in the open to a 3-ton motor-lorry.

The night was bitterly cold and very damp, the lowest temperature in the car being 1 deg. Centigrade. All was ready for a start at 3.50 a.m. the next morning (Oct. 31st), but owing to refractory engines—caused by the cold—the start was delayed until 5 a.m. The morning was dark, with a thick mist, and as the lighting accumulators had not been re-charged during the night, hand-lamps were used.

On the way to Paris, efforts were made to get in touch with several places by wireless, but no replies were received. However, at 3 p.m. a landing was made at an Airship Station outside Paris, but this shed was too small to accommodate the airship, which necessitated another night being spent in the open.

The following morning (Nov. 1st) the airship started at 6.15 a.m. At 7.55 they attempted to call up Havre, Boulogne, and Polegate to get weather reports, but again they received no replies. At 8.15 they sighted the coast, which was only visible occasionally, and followed it along to Dieppe. Then they crossed the Channel, and at 12.25 sighted the coast of England. It was only then that they received orders as to their destination, and at 2.15 p.m. made a successful landing.—R. M.

GERMAN LOSSES.

An official communiqué states that, from Jan. 1st, 1918, to Nov. 11th the R.A.F. destroyed 3,539 enemy machines, and drove down 1,251 out of control; during the same period 1,420 British machines were reported missing. One would again point out that there is no relation between machines reported missing and machines destroyed. Many British aeroplanes have been destroyed on our side of the lines and these were naturally not included in the "Missing List."

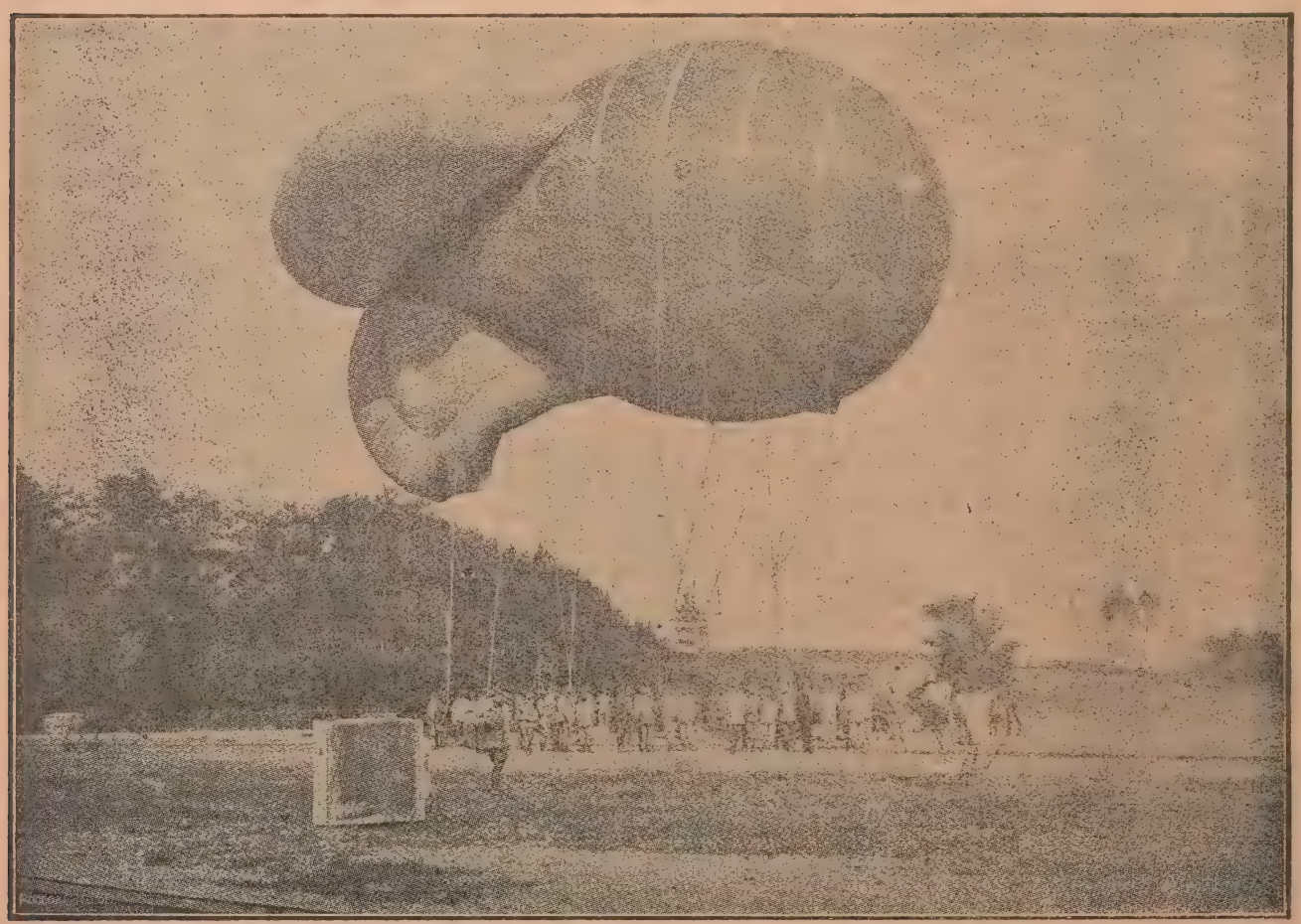
Besides aerial fighting, the usual contact patrols, reconnaissance, and artillery spotting was carried out. Since Jan. 1st, 264,605 negatives were taken by British aviators, from which 5,800,000 separately enlarged prints were made. Five thousand four hundred and twenty-nine tons of bombs were dropped on ammunition dumps, transport, marching infantry, and billets behind the German lines.

These figures represent all fighting fronts upon which the R.A.F. worked.

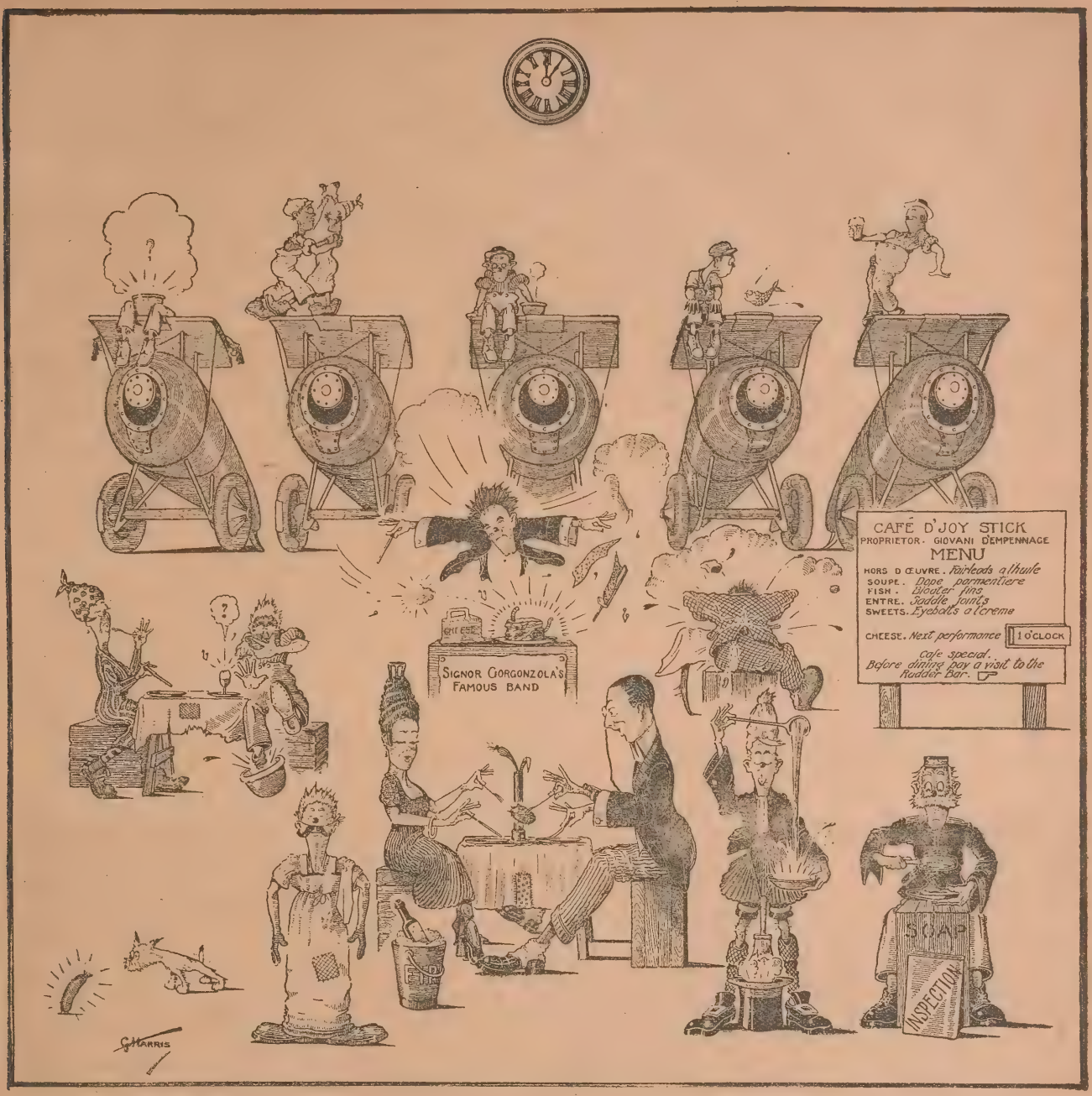
ITALIAN NEWS.

The international altitude limit, of which mention was made in The Aeroplane quite recently as having been reached by an Italian observation balloon, was well over 3,000 metres, and the craft was an A.P., the newish service balloons designed by Major Avorio and Dr. Prassone. The design of the A.P. is, though nearly spherical, very non-resisting to wind-pressure, hence the balloon is very easily manœuvred, rides wonderfully steady, and needs a very small area for its operation, which, perhaps, accounts for its being in use on the mountain tops, and the altitude reached herefrom. A soldier artist tells me that it is a joy to the eye as well.

The departure of the American pilots still not quite fledged is announced by the Roman papers. Points of departure, Foggia and other Southern schools—destination, France and Home, one hopes.—T. S. Harvey.



The Avorio-Prassone Kite-Balloon (Observation Type), as illustrated in the Italian Press.



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FROM THE "LONDON GAZETTE."

AIR MINISTRY, Dec. 3rd.

His Majesty the King has been graciously pleased to confer the undermentioned rewards on officers and other ranks of the Royal Air Force in recognition of gallantry in flying operations against the enemy :—

THE DISTINGUISHED FLYING CROSS.

Lt. (actg. Capt.) REGINALD THOMAS JONES. (France.)
During recent operations this officer has been conspicuous for his bold daring in bombing enemy transport, bridges, etc., at low altitudes, in face of the very heavy hostile fire, on one occasion descending as low as 150 ft. to locate his objective before commencing his attack.

Lt. (actg. Capt.) SIMON JONES. (France.)
This officer has taken part in many long-distance bombing raids, and has carried out forty solo reconnaissances, obtaining most valuable information and proving himself an officer of exceptional ability. In addition he has destroyed or driven down out of control four enemy aeroplanes.

Lt. JOHN EVERSLEIGH KENDRICK, Northd. Fus. (France.)
This officer has acted as observer on numerous occasions in co-operation with our artillery and in photographic reconnaissance. By his coolness and skill under all circumstances he has gained the complete confidence of all the pilots with whom he has served, enabling them to carry out their observations and photography with full assurance that their safety from surprise attacks is insured.

Lt. (actg. Capt.) BASIL GRAHAM HUMPHREY KEYMER. (Sea Patrol, Mediterranean.)
A very gallant flight leader of exceptional ability and determination. On July 24th, when on a long-distance raid, Lt. Keymer was attacked by three hostile aeroplanes and three seaplanes. Undaunted by these heavy odds, he engaged the enemy for thirty-five minutes and eventually succeeded in driving them off.

Lt. (actg. Capt.) ROY KING, Aust. F.C. (France.)
During operations in the early part of September this officer rendered gallant and valuable service in bombing and attacking with machine-gun fire enemy billets, trains, troops, etc. In carrying out these operations he ensures success by descending to low altitudes, disregarding personal danger incurred by so doing.

Lt. ALFRED KITELEY, R.F.A. (France.)
This officer has displayed conspicuous skill and keenness in pressing forward with his balloon in order to keep touch with our artillery. With resolute determination he has overcome all difficulties due to adverse weather conditions and heavy hostile fire. This devotion to duty is the more creditable to this officer as he is still suffering from wounds received some time back.

Sec. Lt. (actg. Capt.) HORACE PERCY LALE. (France.)
A bold and courageous officer, who leads his patrol with marked skill and judgment. He has accounted for twelve enemy aeroplanes —five crashed, four shot down in flames, and three driven down out of control. On Sept. 6th he led his patrol of nine machines to the assistance of some formations that were attacked by thirty or forty enemy aircraft; in the engagement he and his observer accounted for two Fokkers; eventually the enemy was driven off, five of their machines being destroyed and three shot down out of control.

Lt. ROY KIRKWOOD MCCONNELL. (France.)
This officer has accounted for five enemy machines—destroying two and driving down three out of control, proving himself a gallant fighting airman. He has also shown conspicuous bravery in attacking troops and transport.

Sec. Lt. (actg. Lt.) JOHN MACDONALD, Obsr., No. 9 Sqdn. (France.)
This officer invariably sets a fine example of courage and resolute determination. On Aug. 24th, in response to an S.O.S. call, he penetrated far behind the enemy lines at a height of under 1,000 ft., subjected during the whole time to very heavy hostile fire. Having reached his objective, he attacked the enemy with great effect, inflicting numerous casualties.

Lt. VICTOR HENRY MCELROY, Can. Engrs. (France.)
This officer has been conspicuous for his courage and determination in attacking enemy troops, transport, huts, etc., on bombing raids. Carrying out this service at low altitudes, his success has been marked, and he has inflicted heavy casualties on the enemy, his machine being frequently badly shot about, owing to the heavy hostile fire which he had encountered.

Capt. DUNCAN RONALD GORDON MACKAY. (Indt. Force, France.)
An officer of conspicuous ability and determination, who, during the last four months of the fighting, has taken part in twenty-two bombing raids an three photographic reconnaissances, acting as leader on seven occasions. On Oct. 15th he volunteered to carry out alone a bombing attack on an enemy aerodrome; low clouds and mist compelled him to fly at low altitudes varying from 800 to 1,000 ft. Having successfully reached his objective, he obtained two direct hits from a height of 40 ft., and stampeded horses with machine-gun fire. The cool courage and marked initiative shown by Capt. Mackay in this operation merits high praise.

Lt. (actg. Capt.) WILLIAM EDWARD GEORGE MANN. (France.)
This officer has led many patrols into action, and invariably displays marked fearlessness and ability, setting a fine example to other pilots. He has accounted for nine enemy aeroplanes, and in these combats his success has been largely due to his skill in manœuvre and bold daring in closing to short range with the enemy.

Lt. (actg. Capt.) WILFRED REID MAY. (France.)
This officer has carried out numerous offensive and low-bombing patrols, proving himself on all occasions a bold and daring pilot. He has accounted for seven enemy machines; two of these he destroyed in one flight. His keenness and disregard of personal danger is worthy of the highest praise.

Lt. HAROLD ARTHUR SYDNEY MOLYNEAUX, Can. Forces and 56th Squadron. (France.)
During the August operations this officer rendered conspicuous good service on low-flying patrols, causing much damage and inflicting heavy casualties, showing brilliant dash and resolution. He is a bold fighter in the air, and has accounted for two enemy aeroplanes.

Lt. (actg. Capt.) GUY NEWTON MOORE. (France.)
An officer of high courage and ability who has rendered most valuable services in co-operation with our artillery, notably during the operations Sept. 1st to 5th, when, in spite of adverse weather conditions, necessitating flying at a very low altitude, he located 66 active hostile batteries and directed fire on a number of other targets. The skill and accuracy displayed by Capt Moore during these operations was exceptional and of the greatest value.

Lt. MAURICE ASHDOWN NEWNHAM. (France.)
This officer has taken part in several night-bombing raids and in 102 offensive patrols, many of which he has led with ability and success. On the night of Sept. 23rd-24th Lt. Newnham carried out a very successful long-distance raid on an enemy aerodrome. Owing to heavy rain and a strong west wind he had difficulty in reaching his objective. Undeterred by this, he succeeded, and effectively bombed the aerodrome, obtaining two direct hits on a large Zeppelin shed. He then attacked other objectives, descending to ground level to do so. He returned to our lines after a 2½ hours' flight.

Sec. Lt. FRANK SAMUEL OCCOMORE. (France.)
On Aug. 31st this officer carried out a most successful contact patrol over the front of two divisions. The area was twice covered at an altitude varying from 150 to 300 feet, and most valuable information was obtained. During these operations the machine was subjected to very heavy machine-gun fire, being hit in 20 places, and it was also attacked by an enemy aeroplane. On other occasions Sec. Lt. Occomore has displayed the same courage and determination in carrying out reconnaissances, invariably bringing back valuable and reliable reports.

Sec. Lt. GEORGE LESLIE PARGETER (R. Fus.). (France.)
A very gallant officer. On two occasions (Aug. 10th and Sept. 1st), when on patrol duty over the enemy lines, the petrol tank was hit by hostile fire. With rare courage and presence of mind Sec. Lt. Pargeter climbed out on to the bottom plane and plugged the hole with his glove. Remaining on the plane, he held the glove in position, thus enabling the pilot to bring the machine back to our lines in safety.

Lt. CLEMENT WATTSON PAYTON. (Sea Patrol, Flanders.)
A gallant and skilful pilot who has himself destroyed two enemy machines and driven down two out of control. Assisted by other pilots, he has also accounted for four others. On Aug. 23rd, in a bombing raid, one of our machines, compelled to descend owing to engine trouble, was heavily engaged by anti-aircraft fire. Observing this, Lt. Payton, with great courage, attacked the hostile batteries at a very low altitude, silencing several of them.

Lt. (actg. Capt.) HAROLD AUBREY PEARSON, M.C. (Italy.)
During the last 10 months this officer has displayed exceptional keenness and ability in carrying out photography and trench reconnaissance. Frequently handicapped by adverse weather conditions and in very difficult country, he has rendered most valuable service in clearing up obscure situations. On June 14th, in low clouds and mist, he took 35 successful photographs previous to an enemy attack. These very materially aided our operations. (M.C. gazetted Dec. 11th, 1916.)

Lt. WILLIAM RITCHIE PHILLIPS, Lond. R. (France.)
Since joining his balloon wing this officer has done over 350 hours in the air, and during recent operations has displayed gallantry, determination, and devotion to duty worthy of high praise. On Sept. 27th Lt. Phillips made a continuous flight of 13 hours, rendering very valuable service.

Lt. CLEO FRANCIS PINEAU. (Sea Patrol, Flanders.)
An officer of exceptional merit, who sets a very high example of courage and devotion to duty to other pilots. He has destroyed four enemy machines and driven down two out of control. After one of these combats, on Oct. 8th, in which he destroyed a Fokker biplane, he was reported missing.

Lt. BERNARD GEORGE PORTER. (France.)
On Sept. 5th this officer's balloon and winch were heavily shelled when the balloon was 500 feet from the ground. Six of his winch and balloon party were killed and 10 wounded. His balloon being badly damaged, he directed that it should be let up to 1,500 feet. This was done, and the observers were enabled to parachute successfully. The presence of mind displayed by Lt. Porter undoubtedly saved the lives of his observers, and his cool courage set a fine example to his men, keeping them at their posts.

Lt. JARVIS RUPERT FRANCIS RANDELL (Sea Patrol, Mediterranean.)
This officer has shown great gallantry on several occasions, notably on Aug. 9th, when, having driven down a hostile machine, he attacked a train at 500 ft. altitude, compelling the drivers to jump out.

He then engaged a machine leaving its aerodrome, causing it to crash. Descending to 20 ft., he obtained a valuable reconnaissance of the hangars. During the whole time he was subjected to heavy anti-aircraft and machine-gun fire.

Lt. (actg. Capt.) Adrian William Edmund Reeves. (Sea Patrol, Flanders.)
This officer has done continuous good work during the past 4½ months, notably in the recent advance, when, between Sept. 28th and Oct. 5th, he carried out 13 raids on enemy railway junctions. A bold and determined fighter, he has taken part in 64 raids, his observer and himself shooting down four enemy aeroplanes.

Sec. Lt. Albert Abram Robinson, M.C. (Liverpool R.). (France.)
On Sept. 6th this officer's balloon was attacked by enemy aircraft and riddled with bullets, and he was compelled to make a parachute descent. On landing he at once obtained permission to re-ascend in another balloon and carry on his observation, displaying marked determination and devotion to duty. During the last month Sec. Lt. Robinson has been forced to parachute three times. (M.C. gazetted Sept. 26th, 1917.)

Lt. Oren John Rose. (France.)
A very gallant officer who has accounted for nine enemy aeroplanes. On Sept. 29th he observed an enemy scout attacking some of our machines; engaging it, he drove it down from 15,000 feet to 6,000 feet, when it fell in flames. On his return journey he attacked and destroyed an enemy two-seater.

Maj. George Samuel Sansom, M.C. (France.)
A very able officer, who has completed nearly 600 hours of observation duty from balloons. He handles the balloon section under his command with consummate skill, notably on Sept. 18th, when he advanced his section to forward positions in a manner deserving of high praise. (M.C. gazetted June 18th, 1917.)

Capt. Gilbert James Scott (R.F.A.). (France.)
A skilful and gallant officer, with a fine record of good service. On Aug. 23rd he carried out a most successful contact patrol. Flying at a height of less than 500 feet, he obtained a most complete and accurate report of the whole corps front. During this patrol he engaged enemy troops, causing heavy casualties. His observer was wounded and his machine badly shot about.

Lt. (actg. Capt.) William Allan Scott, D.S.C. (France.)
This officer has completed 63 raids and has dropped over 50 tons of bombs on various objectives, causing very material damage. The courage, keenness, and skill Capt. Scott displays on these raids is remarkable, and affords a fine example to his squadron. (D.S.C. gazetted Nov. 2nd, 1917.)

Lt. Harold Ernest Searson. (France.)
This officer has shown conspicuous courage and ability when on contact patrols, notably on Sept. 3rd, when he made a most valuable and detailed report of a certain area, in consequence of which report our patrols were pushed forward in pursuit of the retreating enemy.

Lt. (Hon. Capt.) Percival James Slater, S. Staff. R. (France.)
During the operations in September at every advance this officer went forward with his balloon across difficult country, keeping up with and often in front of our artillery. Subjected to heavy bombing, shell fire, and frequent attacks by enemy aircraft, Capt. Slater, with cool courage and marked ability, continued to carry out observations for the artillery, his balloon at times being severely holed.

Lt. Duncan Ross Solomon (R.F.A.). (France.)
During the operations between Aug. 21st and Oct. 1st this officer has spent over 70 hours in the air in all weathers, and has afforded valuable assistance to our artillery. His gallantry, initiative, and skill in handling his balloon has been most noteworthy.

Sec. Lt. Archie Thomas Sprangle. (France.)
A skilful observer of great determination. Between Sept. 1st and 5th, under most adverse weather conditions and in face of hostile attacks in the air, Sec. Lt. Sprangle directed fire on 61 enemy batteries, besides infantry, mechanical transport, and artillery on the move. In this service he displayed marked ability, and the successful results were largely due to his keenness and devotion to duty.

Lt. (actg. Capt.) Stanley Stanger, M.C. (Italy.)
A dashing and determined leader who has frequently engaged enemy formations in superior numbers, inflicting heavy casualties. On Oct. 4th he, in company with another machine, engaged six enemy aeroplanes; three of these were destroyed, Capt. Stanger accounting for two. In all he has destroyed five enemy machines, displaying on all occasions great courage and skill. (M.C. gazetted Sept. 16th, 1918.)

Lt. (actg. Capt.) Richard Stephenson, Ches. R. (France.)
During recent operations this officer has been conspicuous for courage, skill, and perseverance, markedly on Sept. 4th, when he carried out a special reconnaissance to ascertain the exact locality of the enemy's position, which information was urgently required; flying at 200 feet, his machine was subjected to heavy fire, but with fine courage and determination he completed the reconnaissance, rendering a most valuable and accurate report of the situation.

Lt. Arthur Wooton Stevenson. (France.)
This officer has carried out 85 bombing raids, often in most adverse weather conditions. In this duty he has done very valuable service, displaying on all occasions fine gallantry and devotion to duty.

Lt. (Hon. Capt.) Allan Storey. (France.)
On Sept. 26th, while taking part in a general engagement, he was attacked by six enemy machines; two of these at the outset withdrew, but Capt. Storey, with great courage, took the offensive against the remaining four, driving them down from 15,000 to 5,000 feet. During the engagement he was wounded in both legs and his elevator control was almost shot away; he nevertheless maintained the combat till his engine was damaged, when he withdrew, having shot down one of his opponents with smoke issuing from his fuselage. A very gallant action, the more praiseworthy that Capt. Storey was new to service flying, this being the second time he had been over the lines.

Lt. (actg. Capt.) Thomas Stewart Symons, R. Suss. R. (France.)
This officer has rendered most valuable service on contact patrols, his reports being invariably most clear and accurate. On many occasions he has had to fly through our own and the enemy barrage, but, daunted by no difficulty or danger, he successfully performs every duty allotted him.

Lt. Cecil Robert Thompson. (France.)
This officer has destroyed three enemy machines and three kite balloons. At all times he displays utter disregard of personal danger, notably so on Sept. 15th, when, in company with another machine, in face of a heavy barrage, he dived to attack a kite balloon; as he dived he was attacked from the rear by four Fokkers. Disregarding them, he continued to dive, and shot down the balloon in flames. He then, although wounded in the face and shoulder, turned and engaged the Fokkers, who had, in the meantime, been reinforced and numbered 12. Finally, after a stern contest, he made his way back to the aerodrome and rendered his report.

Sec. Lt. Joseph Town. (France.)
On Sept. 2nd this officer performed very gallant service on contact patrol. Flying at a height varying from 400 to 1,000 feet he was subjected to very heavy fire from machine and anti-aircraft guns, and was harassed by an enemy scout which he engaged and drove off. Despite this determined opposition he completed his patrol and brought back a full and detailed report, which proved of the greatest value.

Lt. Frederick Dudley Travers (Herts Yeo.). (Salonika.)
A gallant and able officer who has displayed on many occasions boldness in attack, never hesitating to engage the enemy as opportunity occurs. On June 1st he, in company with two other pilots, attacked a hostile formation of 12 machines; four of these were shot down and the remainder driven off.

Lt. Stanley Turner. (France.)
A gallant and zealous pilot who has rendered valuable service on photographic and contact patrols. On the morning of Sept. 20th, Lt. Turner carried out a most successful contact patrol, locating the position of our troops in face of very heavy hostile fire and under adverse weather conditions. Owing to a hostile counter-attack the situation that evening again became obscure, and this officer carried out a second patrol over the same area. Owing to his Klaxon horn being damaged by the intense fire to which he had been subjected, he was compelled to descend to a very low altitude to ascertain the position of our troops. On this occasion Lt. Turner displayed courage and skill of a high order.

Capt. Lawrence James Wackett (Aus. F.C.). (France.)
During recent operations this officer has rendered conspicuous service in taking oblique photographs and in supplying our troops with ammunition. On Sept. 25th, flying at only 1,500 feet, he obtained a complete series of oblique photographs of an area several miles behind the enemy front line; although his radiator was hit, he, by skilful piloting, succeeded in landing his machine safely at his aerodrome.

Lt. Guy Wilbraham Wareing. (France.)
A bold and courageous aviator who has destroyed four enemy aeroplanes and shot down in flames a hostile balloon. He is conspicuous for zeal and devotion to duty.

Lt. Edward Francis Waring. (Sea Patrol, North Sea.)
Whilst on patrol on Aug. 28th this officer observed a hostile submarine submerged, apparently awaiting one of our convoys that was in the vicinity. Skilfully manœuvring into position, he released a 520 lb. bomb which detonated about 30 feet from the bow of the enemy craft. Bubbles and oil rose to the surface, and it has since been established that the submarine was destroyed.

Lt. John Weston Warner. (France.)
This officer has carried out numerous offensive patrols and low-flying attacks on enemy ground targets, displaying on all occasions the real offensive spirit, and, when acting as flight commander, he has proved himself to be an excellent leader, full of initiative and courage. He has accounted for six enemy aeroplanes.

Lt. (actg. Capt.) Arthur Treloar Wheatley, D.S.C. (France.)
This officer has shown a very high standard of efficiency. Untiring, and full of initiative, he sets a fine example to the younger pilots. During the recent advance he has carried out daring reconnaissances at very low altitudes, invariably bringing back valuable information. He is a bold fighter in the air, having accounted for five enemy machines. (D.S.C. gazetted April 26th, 1918; Bar to D.S.C. June 21st, 1918.)

Lt. (actg. Capt.) James Butler White. (France.)
A fine fighting pilot who has accounted for eight enemy aeroplanes. He has led numerous offensive and low-bombing raids, and by his able and daring leadership has achieved great success with a minimum of casualties to his patrol.

Lt. Harold Wickett. (Sea Patrol, Mediterranean.)
A most persevering and courageous pilot, who, undeterred by difficulties, invariably reaches his objective. He has taken part in long-distance raids over an important enemy town, and has displayed marked skill in so manœuvring his machine that most excellent results have been obtained from bombing and photographic reconnaissances.

Lt. Basil Syers Wilcox. (France.)
An officer who on all occasions shows keenness and devotion to duty of a high order. He has carried out numerous contact patrols, bringing back at all times very complete and valuable information. Handicapped frequently by adverse weather conditions, and in face of severe opposition from aircraft and machine-gun fire, he invariably displays praiseworthy perseverance and courage in carrying out his allotted task.

Lt. (actg. Capt.) Robert Owen Williams. (France.)
During operations in September this officer has been conspicuous for his ability, gallantry, and untiring energy in carrying out contact patrols. Undeterred by heavy hostile fire or adverse weather conditions, Capt. Williams has almost invariably succeeded in locating our troops and in obtaining valuable information.

Lt. Eric Constant Willis. (France.)
On Oct. 2nd this officer carried out an extremely valuable contact patrol, flying for two hours at an average height of 300 feet. Whilst employed on this duty he assisted in repelling a counter-attack, vigorously engaging the enemy with machine-gun fire from a height of 50 ft. During the combat his machine was struck by a shell; notwithstanding this, he continued his patrol, sending in three most important reports as to the position of our advancing troops. On landing at his aerodrome his machine collapsed. A fine example of courage and devotion to duty.

Lt. Claude Melnot Wilson. (France.)
Bold in attack, this officer never hesitates to join in an engagement with the enemy, regardless of their numerical superiority. On Aug. 18th, with four other machines, he attacked a large hostile formation. Five enemy machines were destroyed, Lt. Wilson accounting for one. In all he has four machines and one balloon to his credit.

Lt. James Roy Stephen Young. (Sea Patrol, Mediterranean.)
A most skilful and gallant observer. This officer has taken part in long-distance raids over an important enemy town, and has obtained

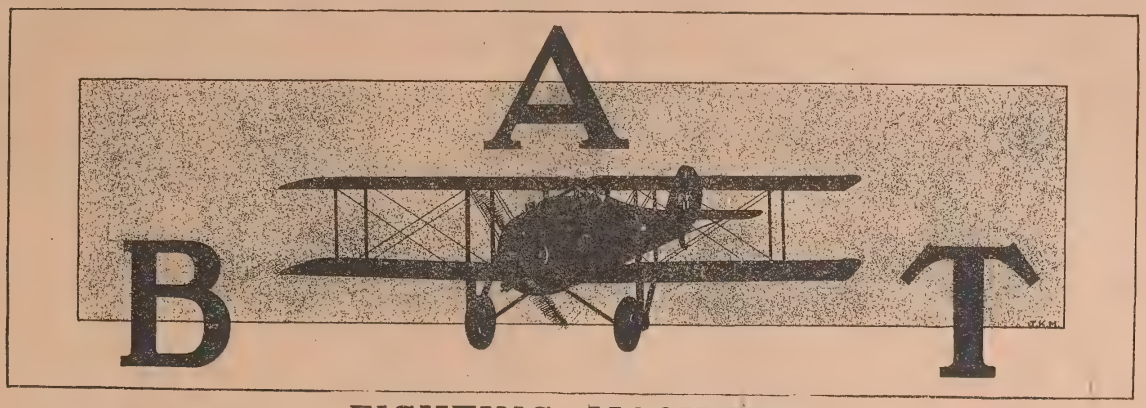
(Continued on page 2229.)

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TWO MODERN GERMAN BIPLANES.

The following reports are published by kind permission of the Technical Department, Ministry of Munitions, to whom the Editor desires to express his thanks.

THE PFALZ (D.XII) SINGLE-SEATER FIGHTER.

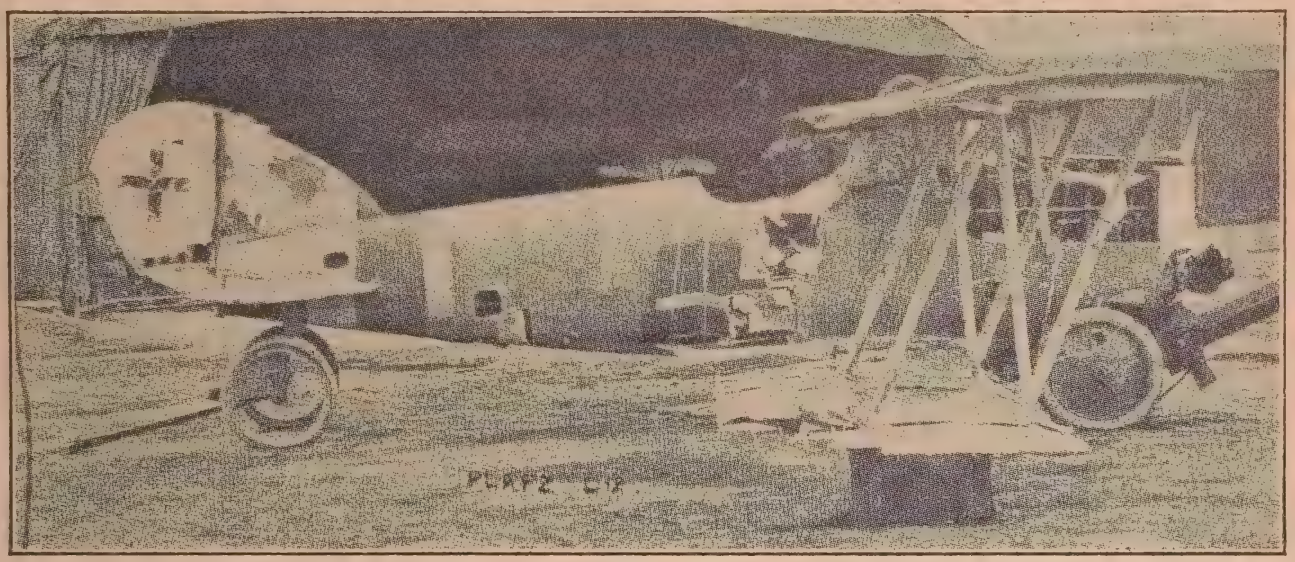
This aeroplane, which is allotted G/H.Q/6, was brought down near Dury, on 15/9/18; by Lt. Cameron (No. 1 Squadron) and Capt. Staton (No. 62 Squadron).

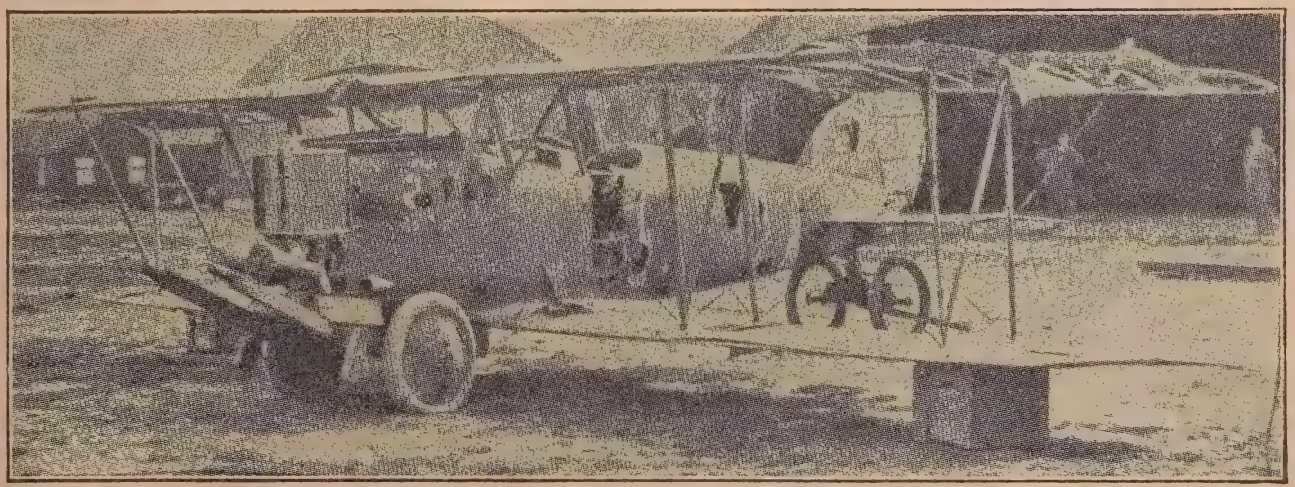
Although in construction it is strongly reminiscent of the Nieuport-like type of Pfalz which was reported on in I.C. 636, the design of this machine is entirely new, and is of considerable interest.

General Design.

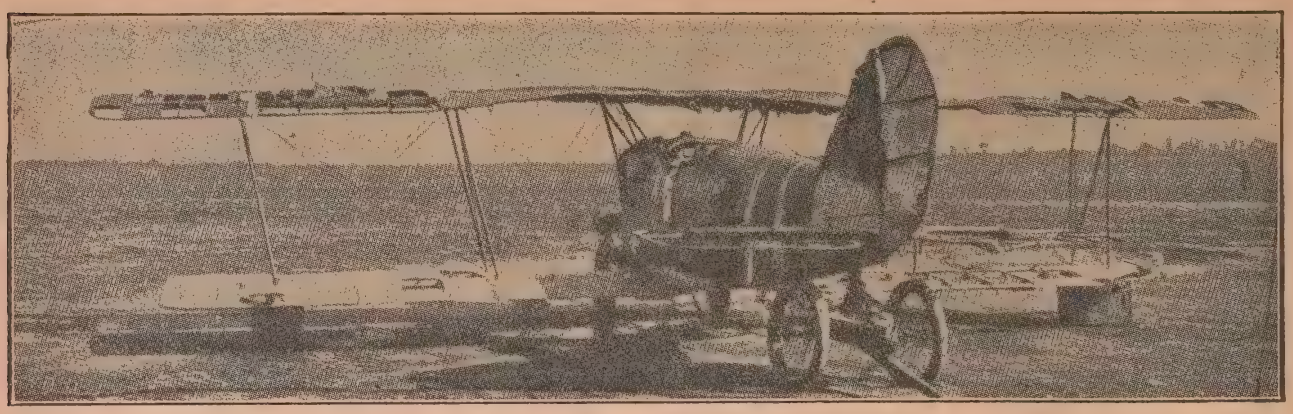
As will be seen from the General Arrangement drawings on page 2190, the D.XII Pfalz has a car-type radiator in front of the engine, and wings which have two bays a side. The lower planes are faired off into the body in the characteristic Pfalz way, but the fin, which in the earlier model was built of 3-ply as an integral part of the body, is now a separate fitting.

Area of upper wings (without ailerons)	104.8 sq. ft.
Area of lower wings (both)	117.6 sq. ft.
Area of aileron (one only)	8.4 sq. ft.
Area of balance of aileron	0.8 sq. ft.
Area of elevators (each)	8.4 sq. ft.





Side and Three-quarter Front Views of a wrecked Pfalz D.XII Single-seater Fighter.



Rear Three-quarter View of the Pfalz D.XII.

Area of balance of elevator (one)	0.6 sq. ft.
Area of rudder	8.8 sq. ft.
Area of balance of rudder	0.4 sq. ft.
Area of tail plane (both sides)	16.0 sq. ft.
Area of fin	4.4 sq. ft.
Area of body (horizontal)	32.8 sq. ft.
Area of body (vertical)	53.6 sq. ft.
Engine	180 h.p. Mercédès
Petrol capacity	18¾ gallons
Guns	Two Spandau (fixed).

The portion of body 3-ply which bears an inscription regarding weight and permissible load is missing.

WINGS.

The flat upper plane is built in one piece as before, but the centre section contains neither gravity tank nor radiator, and the tips are no longer heavily raked. The two ailerons of high

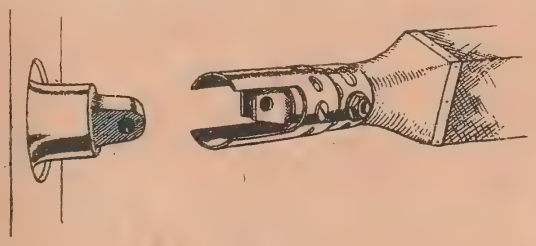


Fig. 1.

aspect ratio, are very similar to those of the D.VII Fokker, as are the placing of the radiator and the form of the interplane struts.

The lower planes, which are attached to a kind of centre section that may be said to grow out of the body, are of the same chord as the upper plane, and only slightly shorter in span. The lower planes possess a dihedral angle, in this case of 1½ deg., and the two pairs of interplane struts on each side slope outwards.

The attachments of the lower plane to the body are unchanged. From Fig. 1 it will be seen that the spars are cut down to circular section at their extremities, and a piece of steel tube is bolted over.

A lug on the fuselage has a circular-section base round which the open end of the tube on the spar fits, while the lug itself is pinned into the fork on the spar in the usual manner. Both front and rear spars are attached in this way.

Fig. 2 shows the upper aerofoil section compared with that of the R.A.F. 14, which is shown dotted. It will be noticed that the two sections approximate more closely than was previously the case.

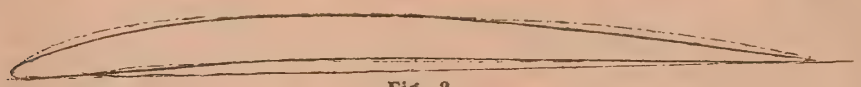


Fig. 2.

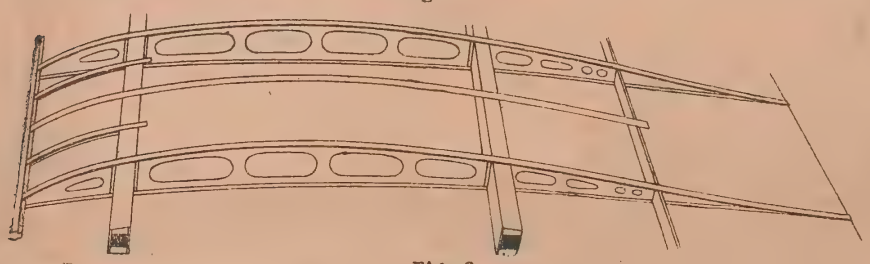
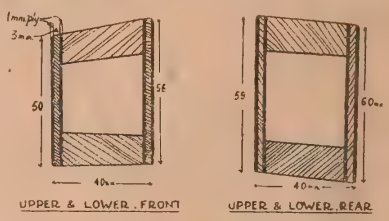


Fig. 3.

The wing construction of upper and lower planes is similar. Each lower wing contains 11 ribs, spaced at equal intervals of approximately 13½ ins. The wood leading edge of the plane is not of the usual "C" section, but is more solid, as will be noticed from Fig. 3. The spars retain the former Pfalz design, but the section is of a squarer shape than formerly, and the flanges are not spindled. Dimensioned sketches are given in Fig. 4, and the upper and lower plane spars are exactly similar. At those points where the strut attachments occur, the spars are solidified by the insertion of small blocks of wood, as shown in the lower sketch of Fig. 4. The various components of the spars are very strongly glued together with a casein cement, and fabric is glued round the whole.

The tape lattice work that was found in the old-type Pfalz between the spars, and between the rear spar and trailing edge is no longer present, but a vertical rectangular-section strip of wood lies parallel to the rear spar between that member and the trailing edge, and strips of wood are tacked on to the leading edge, and on to the two spars, and finish just behind this strip. These false ribs are placed midway between the true ribs, and the space between each false and true rib is again bisected by another strip. These pieces simply pass from the leading edge to just behind the front spar, and are built up with a vertical strip so that the whole is of T section. The ribs are of a 2 mm. 3-ply, with flanges tacked on in the usual way, and are lightened to the extent shown in Fig. 3, which explains clearly all the features just described. The trailing edge is of wire and each rib has fabric sewn over it. There are 12 steel compression tubes in the upper plane, and five in each of the lower planes. The bracing varies from steel tie rods of 5 mm. diameter to 12-gauge piano wire.



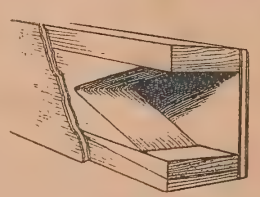


Fig. 4.

AILERONS.

The ailerons, which are fitted only to the upper wings, are very similar to those of the D.VII Fokker. They are balanced, and their high aspect ratio can be judged from the General Arrangement drawings. They are constructed of light welded steel tube, and have the usual welded-up curved aileron lever, which works in a slot cut in the plane. The hinges by which the ailerons are attached are very simple. A length of 3/16 in. mild steel rod passes through eyebolts fixed alternately to the wing and aileron, and is secured at one end by a knob, and at the other end by a split pin. Fig. 5 shows how strongly the false spar, to which the aileron is hinged, is coupled to the rear spar.

STRUTS.

All the interplane struts of the D.XII are of streamline steel tube,

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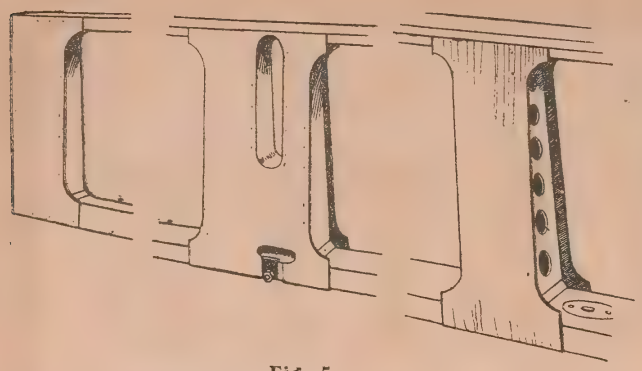


Fig. 5.

and not of wood as before. The centre section struts take the form of two "M's," as is clearly shown by the side view in the scale drawings. A slight adjustment is possible at the three central points, by the means already mentioned in the Report on the Fokker biplane, i.e., there is a nut welded to the point of the strut, and a ball-headed bolt is screwed in. The ball, which is drilled, fits into a pierced round socket, and a small bolt locks the joint.

The interplane struts are of precisely similar design to those of the D.VII Fokker, and are of N-shape when seen from the starboard side of the machine. They slope outwards from bottom to top, but, since the spars are equal distances apart in top and

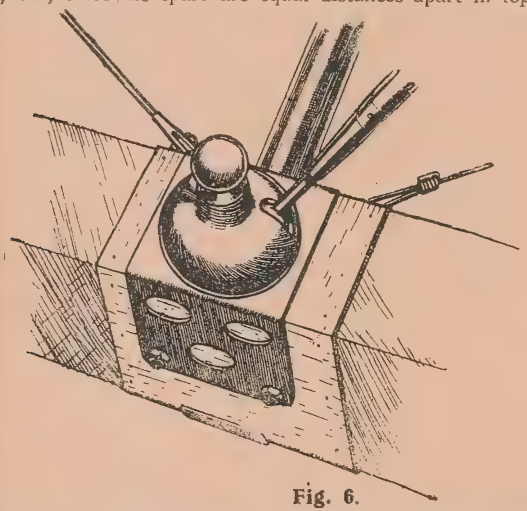


Fig. 6.

bottom planes, the front and rear limbs are parallel. They are attached to the spars by similar joints to those of the centre section, but in this case the strut carries the cup, and the spar has the ball-headed bolt passing through from top to bottom. Fig. 6 shows the spar fitting, and explains the manner in which the bracing is fixed by a dome held down by the bolt. The diameter and width of the struts, both centre section and interplane, are

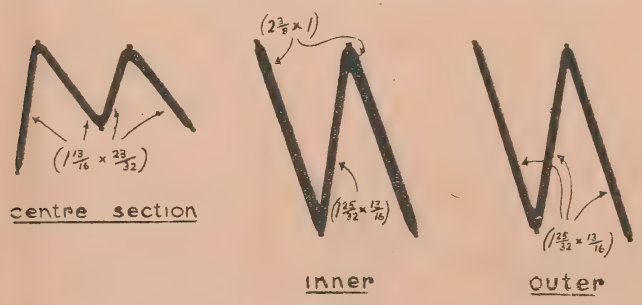


Fig. 7.

marked on a diagram, Fig. 7. The gauge of the metal has not been measured.

The wings are braced with the usual flying and landing cables, and besides these it will be noticed from the scale drawings, that a lift wire is fitted between the lower rear spar and fuselage joint at the lower end, and the upper rear spar and centre section strut at the upper end. The lower front spar root is also joined by a cable to a lug fixed a few inches from the front of the engine bearers.

Fuselage.

It is interesting to note that, although many drastic alterations between the D.III Pfalz and the new type have been made, the method of construction employed for the fuselage has not been changed.

The body is of oval section, deeper in proportion to its width than before, and has eight lightened longerons, to which are fixed lightened cross bulkheads. Over this framework, two thin 3-ply skins are tacked spirally, as was described in the D.III Pfalz Report. The body is entirely without internal wire bracing. There is a strong bulkhead immediately behind the engine, and forward of this the 3-ply skin drops almost to the level of the engine bearers, as may be seen in the photographs. The sides of the engine are enclosed by aluminium cowls, and the front is covered by the radiator. An aluminium cowl rounds off the lower part of the nose, and joins the 3-ply of the body.

The pilot's seat is missing, but it was supported on a steel tubular framework, which remains, and is illustrated in Fig. 8. It should be noticed from this sketch, that the seat is adjustable both horizontally and vertically, there being three possible posi-

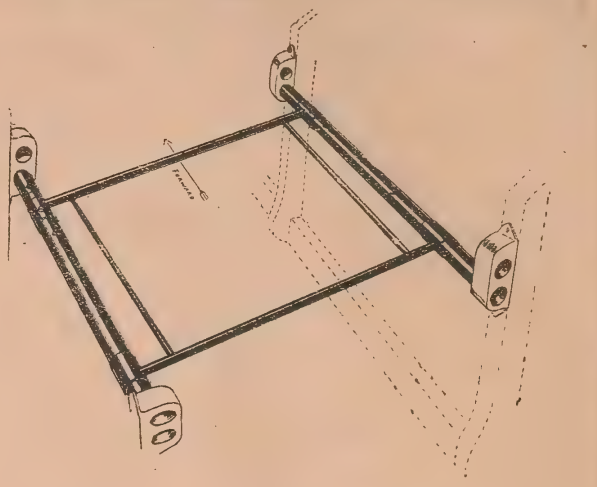


Fig. 8.

tions horizontally, and two vertically. The pilot's backrest is a simple strip of webbing attached to the sides of the fuselage, and the anchorage points for the safety belt are exactly as on the D.III machine. The body tapers consistently towards the rear, and finishes in a vertical knife-edge, about 16 ins deep.

Tail.

The body and fin are no longer integral, as in the D.III, but the fin is simply a self-contained unit of welded-steel tube and fabric, bolted into its place. The fixed horizontal tail plane, however, is integral with the body, although the joint between fuselage and tail plane is an abrupt angle. The tail plane spars pass right through the body, and are connected by ribs lightened roughly by the boring of many circular holes.

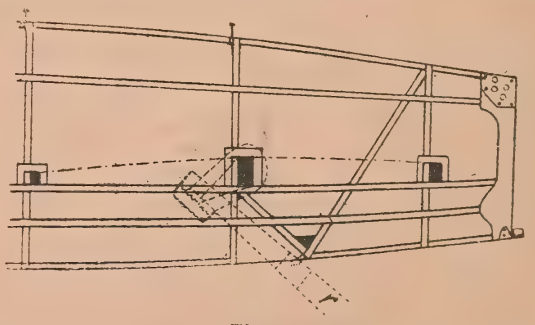


Fig. 9.

Not only is the angle of incidence of the tail plane not adjustable, but the plane is incapable of removal. The camber is symmetrical, and its centre line is not only parallel to, but also in line with the crankshaft.

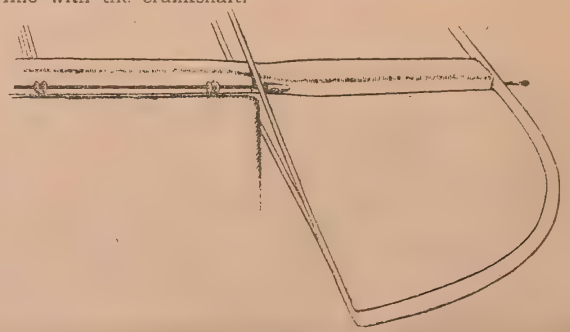


Fig. 10.

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The balanced and divided elevators (in the D.III the elevator was in one piece) are hinged by a means similar to the aileron hinges, and from the sketch, Fig. 10, which shows the manner of removal of the hinge-rod, it will be noticed that the leading edge of the elevator is a steel tube, flattened to a vertical oval in the unbalanced portion, and to a horizontal oval in the balanced piece. The elevators are constructed throughout of welded steel tube, and the balanced rudder has the same construction.

The tail skid is a sturdy piece of ash with the usual steel shoe, and is balanced about its middle. The upper half is encased in the fuselage, and the shock absorber is of double coil steel spring.

Fig. 9 shows the framework construction at the rear of the fuselage.

Undercarriage.

This component was not salved, and in the scale drawings the D.III undercarriage has been supplied, as the two are conjectured to be substantially similar. From the sockets on the fuselage, it is clear that the limbs of the undercarriage vee finished in ball joints.

The following particulars regarding the undercarriage are taken from a French source. It is of the same type as that shown in dotted lines in the scale drawings, but the centre line of the axle is vertically underneath the leading edge of the lower planes, and 31½ ins. below this leading edge at the centre section. The track is given as 61 ins. in the French drawings.

Engine and Mounting.

The engine, a 180 h.p. Mercédès (reported to be No. 42932, B.N. 827, M.N. 63, guaranteed till 30/1/19), is carried on rectangular section ash bearers (3 5/16 ins. × 1½ ins.), which are lightened in places to I section. At the front end, the bearers project a few inches beyond the U-shaped front bulkhead. Two other similarly-shaped bulkheads support the bearers in the places shown by dotted lines in the side view of the scale drawings, and at the rear the bearers are mortised into the behind-engine bulkhead, so that the end of the bearers are flush with the rear surface of the bulkhead. The top of the bearers is covered on either side with a 3-ply shelf which extends to the side of the fuselage. In the three-quarter front view photograph may be seen an aluminium scoop (there is also one on the starboard side), which leads air round the crankcase for cooling purposes. The air escapes by holes which are visible just above the leading edge of the lower plane.

Radiator.

The radiator no longer occupies the position it had on the D.III model—i.e., in the centre section—but now closely follows

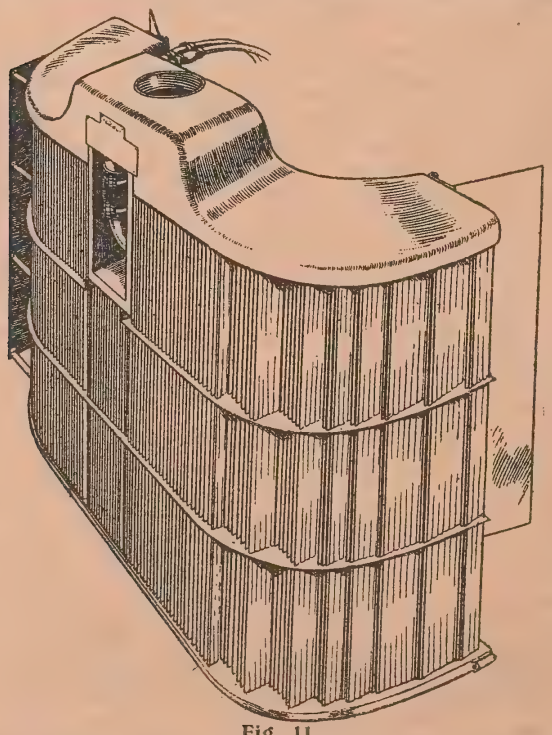


Fig. 11.

Fokker practice. Fig. 11 shows the shape and construction, and it will be noticed that the whole radiator is situated above the crankshaft. The tank at the head of the radiator is of sheet brass, covered with an aluminium lacquer.

The construction, it will be observed, is very simple. A large number of oval-section tubes of thin brass (9 mm. × 4 mm. cross section), are arranged vertically between the header tank and the radiator bottom, and are supported by two intermediate shelves. The tubes are staggered, and have their cross section inclined at a slight angle to the line of flight, so that the air currents have no straight path, but must impinge upon all the tubes in their course through the radiator. There is a peculiar aluminium "blinker" on the starboard side, permanently fixed edge-wise to the line of flight. Its probable purpose is to prevent the propeller swirl from altogether missing the starboard part of the radiator, by deflecting the current.

The fact that it is fixed on the starboard side, and that the propeller turns in an anti-clockwise direction when seen from the front, gives support to this view.

Two aluminium shutters are fitted behind the radiator, one

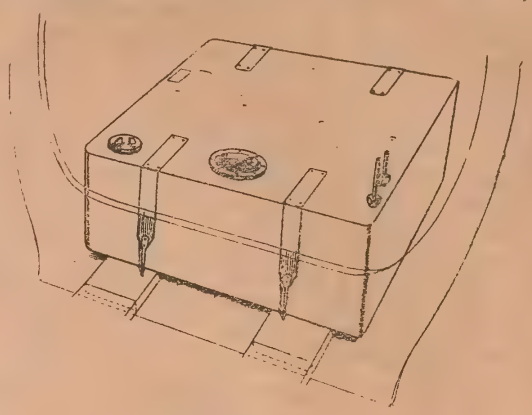


Fig. 12.

each side—the tops can be seen in Fig. 11—and are worked positively and independently by means of cables.

The radiator is supported by two sheet-steel brackets, which are fitted to the foremost bulkhead, a few inches above the engine bearers. (See three-quarter front view photograph.)

Petrol System.

As in the D.VII Fokker, both petrol tanks are inside the fuselage. It will be seen that the seat is placed rather far back, and in connection with this, it is remarked that the main petrol tank (sketched in Fig. 12) is placed low down in the fuselage underneath the rudder bar, and is covered with a 3-ply foot board. Its capacity is 16.1 galls. The auxiliary tank is slung from the gun bearers, as shown in Fig. 14, and has a capacity of 2.6 galls. This gives a total petrol capacity of approximately 18¾ galls. Both tanks work under pressure. The usual Mercédès oil tank is present, and holds, roughly, 2 galls.

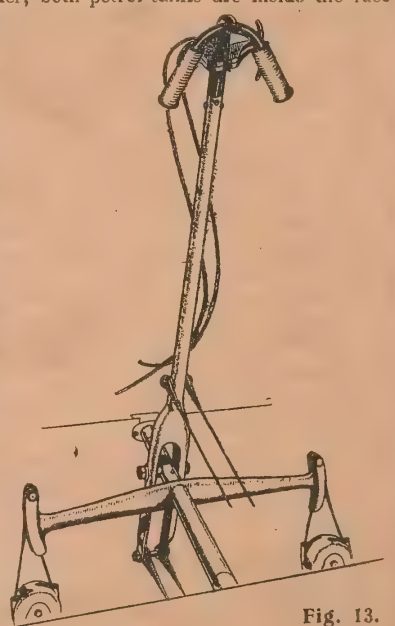


Fig. 13.

The throttle is a simple lever, without quadrant or ratchet, which is coupled to the carburetter by light gauge steel tubing, and there is no sign of there having been any inter-connected throttle on the control lever. The welded exhaust pipe points outwards and downwards, and is visible in several illustrations.

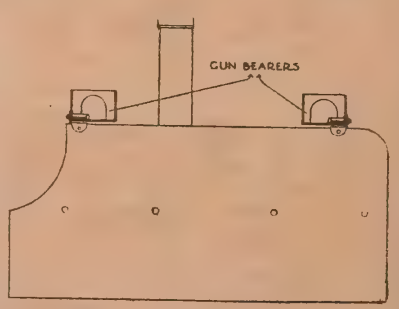
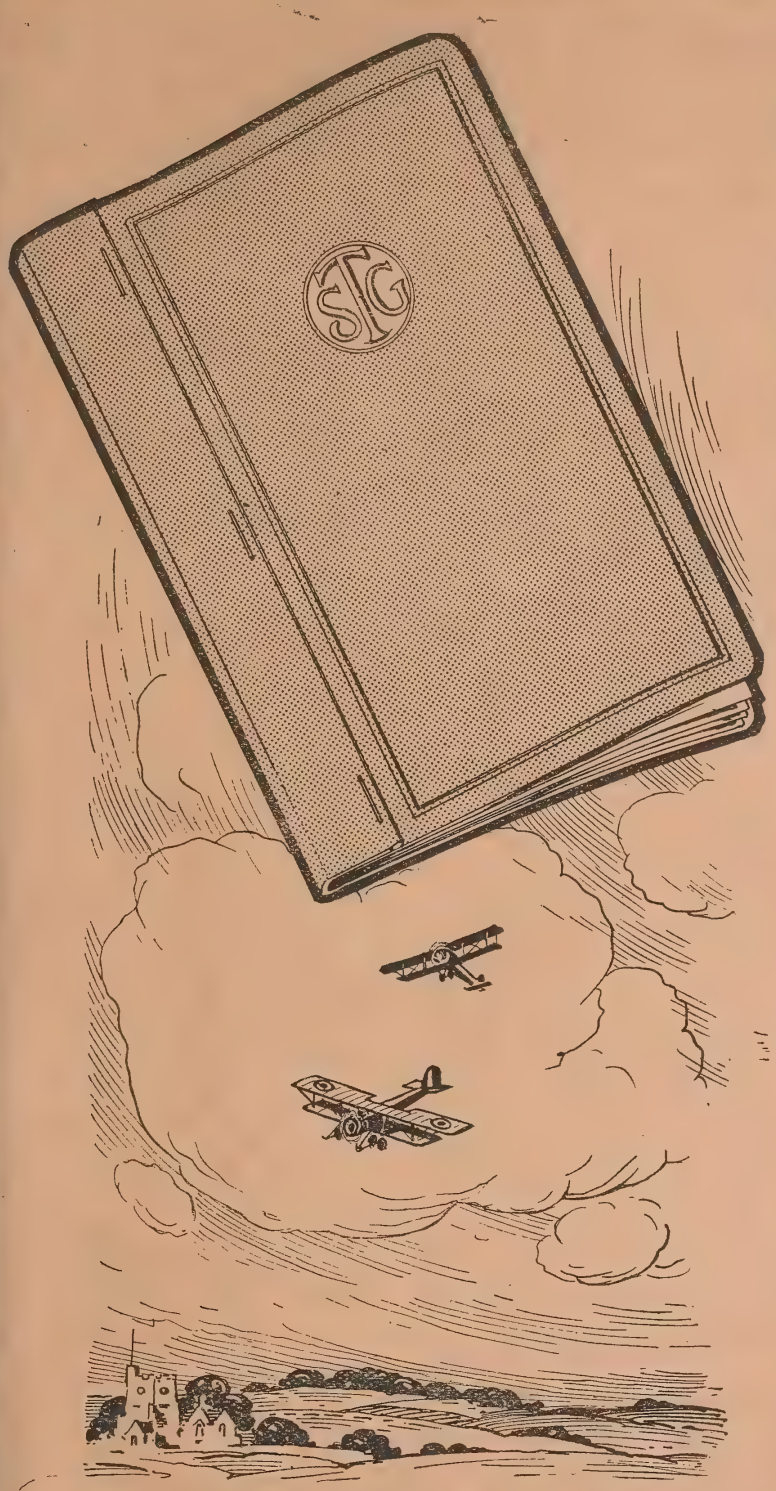


Fig. 14.

Controls.

The stick and its connections are both clearly explained by the sketch (Fig. 13). It will be noticed that only the gun triggers are found near the handles. The rudder bar is precisely similar to that of the D.III Pfalz, and has the same adjustment. From the photographs it will be noticed that the cables are enclosed in the body for the greater part of their length and that the upper



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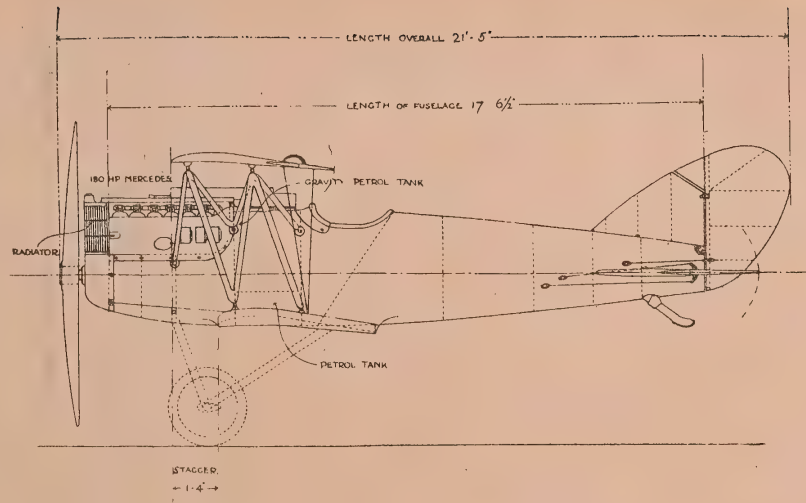
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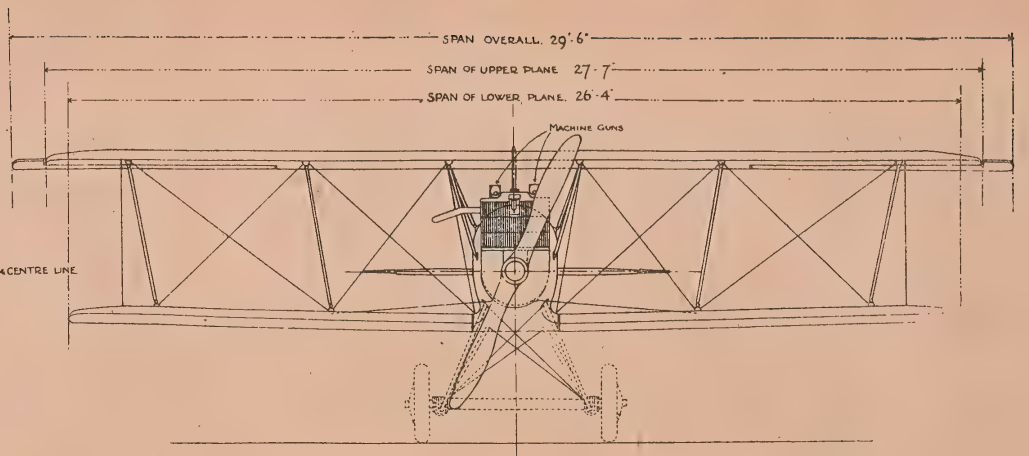
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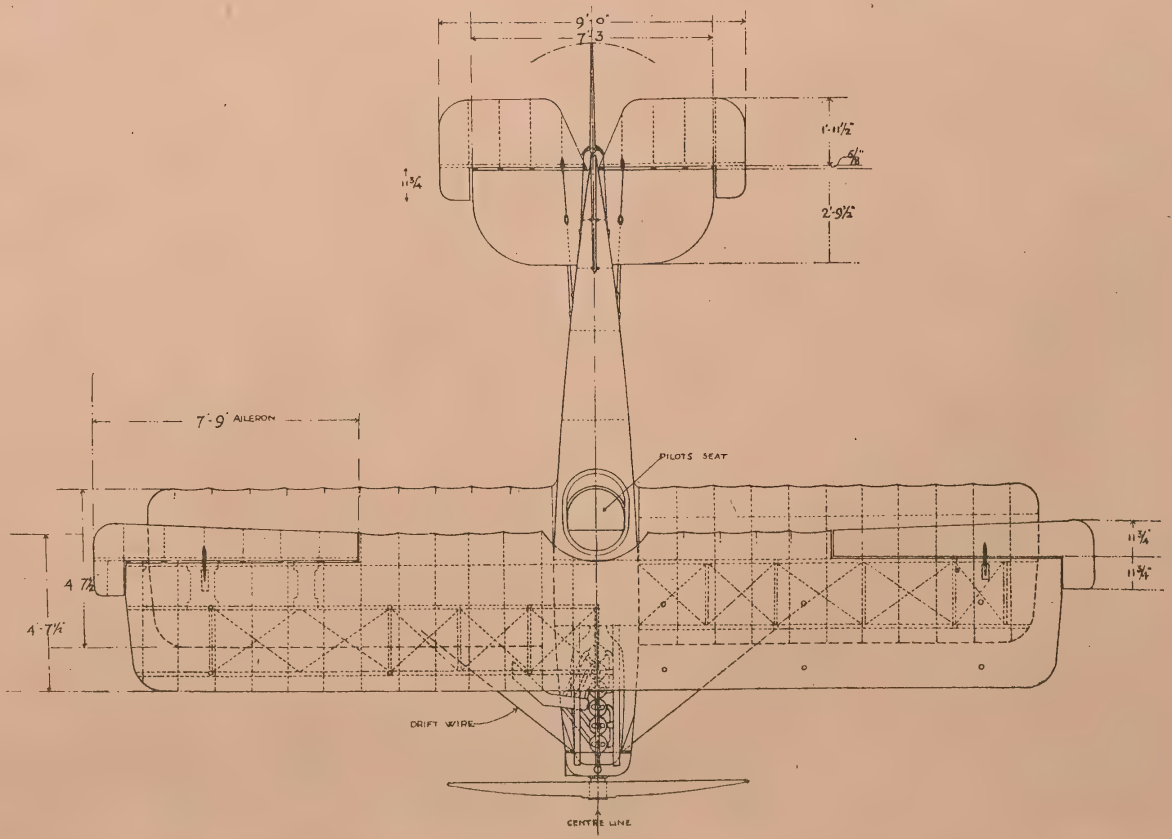
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TYPE D XII

SCALE

INCHES FEET

OVERALL SPAN	29'-6"
SPAN OF UPPER PLANE	27'-7"
SPAN OF LOWER PLANE	26'-4"
LENGTH OVERALL	21'-5"
GAP AT INNER STRUTS	4'-6"
GAP AT OUTER STRUTS	4'-3½"
CHORD OF BOTH PLANES	4'-7½"
ANGLE OF INCIDENCE	3¾°
DIHEDRAL ANGLE (Lower plane)	1½°
STAGGER	1'-4"
SPAN OF TAIL PLANE	7'-3"



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elevator cable passes right through the fixed tail plane. The aileron cables pass in the usual way through the lower wings, and are protected there by rolled tubes of varnished paper. The place where they leave the lower plane and pass upwards to the aileron lever is marked in the drawings and photographs and the pulleys at this point are of aluminium, and are neatly enclosed in cases of light-gauge sheet steel.

Armament.

In common with the undercarriage and many instruments, both guns had been removed before the machine was inspected, but they were obviously of the Spandau type, fixed, and firing through the propeller path by the usual clutch and synchronising gear. The triggers are on the control lever, and are illustrated in Fig. 13. As in the Fokker biplane, two strong steel channels are fitted under the guns, and over the engine. They are visible in all three photographs, and in the scale drawings. The double ammunition box is of sheet aluminium, but has a tinplate top, and holds 400 rounds for each gun. It would appear that links were used between the cartridges, as no special receptacle for the usual web belt could be found. A link and cartridge-case deflector is fitted to the top of the cowling.

Instruments.

These were not salved, and all that can be definitely stated is that the compass was of the Pathfinder type, and was fixed inside the cockpit. No dashboard was used, but the instruments had been distributed around the cockpit. It is reported that the pilot was provided with a parachute, which was folded into the seat, and acted as a cushion, but these fittings were not salved.

Propeller.

This is of Heine make, No. 26206; diameter 2.780 m., pitch 2.000 m. It has eight laminations of mahogany and walnut.

Fabric and Painting.

The fabric is the usual colour-printed variety, and the body was painted dark purple from nose to rear of engine; bluish-grey to pilot's cockpit; and a dark green shading into a light pea-green extending to the tail. The fin and rudder are creamy-white, as is the part of the body above the tail planes, but the tail planes themselves, and the underneath portion of the body at the tail, are painted in broad stripes of alternate black and white. The photographs help to identify these various divisions.

Schedule of Principal Weights. (D.XII Type.)

	lbs.	ozs.
Fuselage, without engine, guns, auxiliary tank or oil tank, but with main tank and tail skid	257	0
Starboard lower wing, with control cables but no bracing wires. Only one side fabric covered	46	0
Upper wing, with bracing wires, but only one side fabric covered	127	0
One centre section M strut	7	4
Radiator	44	8
Brass oil tank	5	1
Auxiliary petrol tank	7	8
One outer N strut	8	9
One inner N strut	10	0
Fin (covered)	3	2
Aileron (covered)	7	12
Aileron hinge rod	0	8
3-ply tail plane (partly estimated)	19	0
Aluminium nose cowl	3	14
Cockpit cowl and padding	2	0
One aluminium side cowl	2	12
Ammunition magazine	7	12
Two clutches for synchronising gear	5	13
Two gun channels	5	5

The weights of the various components of the earlier Pfalz—the D.III type—make an interesting comparison, and are given below :—

	lbs.	ozs.
Fuselage, without engine, guns, or empennage, but with tanks and all fittings	295	0
One lower plane, covered, but without bracing wires	49	0
Complete upper plane, covered, with ailerons, bracing wires, radiator, and gravity tank	225	0
One centre section strut	9	6
Radiator	37	3
Brass oil tank	3	2
One U interplane strut	8	13
Aileron, covered	10	14
Fixed tail planes, without fabric	14	9
Aluminium spinner	1	7
Cowl behind spinner	2	13
Exhaust pipes	11	8
Tail skid, bare	5	9
Elevator, without fabric	9	0
Rudder, with fabric	6	13

G.T.C.,
Ap.D. (L.),
J. G. Weir,
Brigadier-General,
Controller, Technical Department.

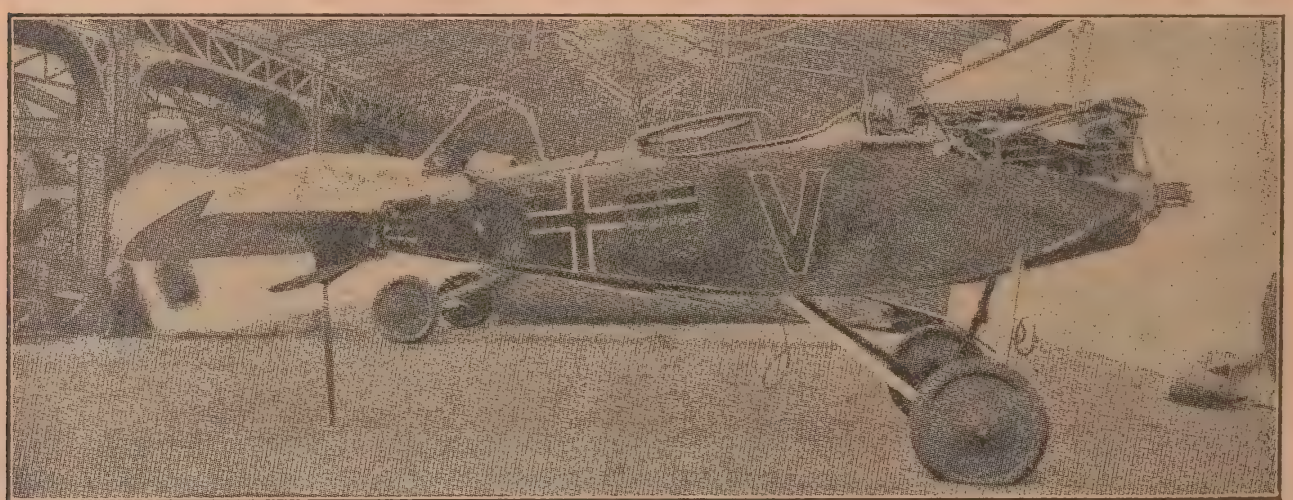
HALBERSTADT TWO-SEATER, TYPE C.L.IV.

This machine, which is allotted G/5Bde./22, landed near Chipilly on Aug. 23rd, 1918. Dates stamped on the main planes give the date of construction as July, 1918.

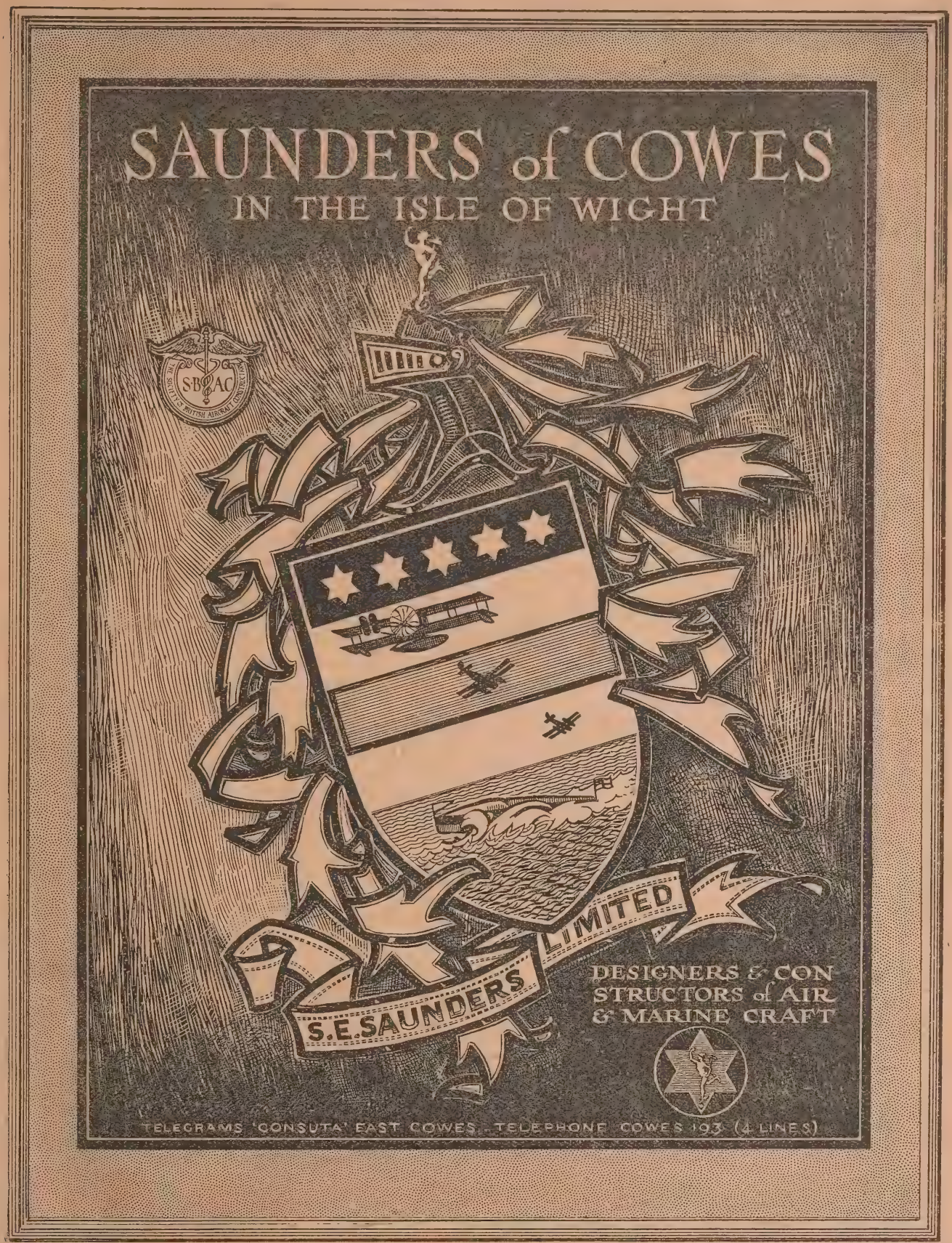
It is very similar in design and construction to the C.L.II type, which has already been fully reported upon (I.C.642), but many detail differences are incorporated.

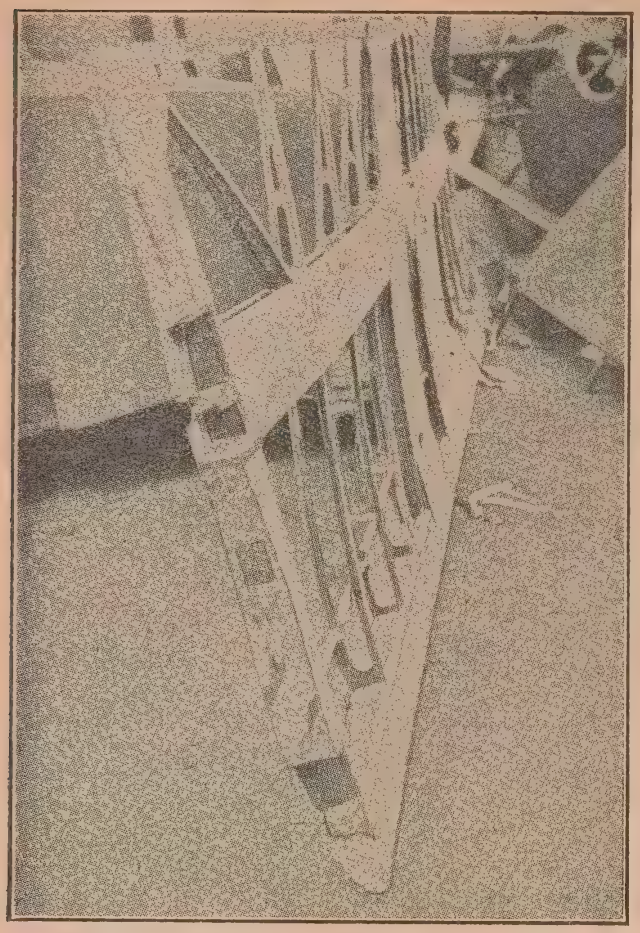
Below is a comparative list of the principal dimensions of both C.L.II and C.L.IV types.

	C.L.IV	C.L.II
Span of upper plane	35 ft. 2¼ ins.	35 ft. 3¼ ins
Span of lower plane	34 ft. 9¼ ins.	34 ft. 11 ins.
Chord of upper plane	5 ft. 2⅝ ins.	5 ft. 3¼ ins.
Chord of lower plane	4 ft. 3½ ins.	4 ft. 3½ ins.
Gap, maximum	4 ft. 4 ins.	4 ft. 0 ins.
Gap, minimum	4 ft. 0 ins.	3 ft. 8½ ins.
Dihedral angle of lower plane	2 degs.	2 degs.
Horizontal dihedral of main planes	4 degs.	4 degs.
Total area of main planes	308 sq. ft.	310 sq. ft.
Area of each aileron	12 sq. ft.	12 sq. ft
Area of aileron balance	2.0 sq. ft.	2.0 sq. ft.
Area of tail planes	16 sq. ft.	13.6 sq. ft.
Area of elevator	13.6 sq. ft.	12.4 sq. ft.
Area of fin	11.4 sq. ft.	6.4 sq. ft.
Area of rudder	7.9 sq ft.	7.9 sq. ft.
Area of rudder balance	1.0 sq. ft.	1.0 sq. ft.
Horizontal area of body	36 sq. ft.	44 sq. ft.
Vertical area of body	41 sq. ft.	52.8 sq. ft.
Length overall	20 ft. 11½ ins.	24 ft. 0 ins.
Engine	180 Merc.	180 Merc.
Capacity of petrol tanks	34 galls.	34 galls.
Capacity of oil system	4 galls.	4 galls.



A Side View of the Fuselage of a Damaged Halberstadt Two-seater, Type, C.L.IV.


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The Framework of a Halberstadt Wing Showing Bent Rear Spar.

Crew	Two.	Two
Guns	1 fixed and 1 movable.	

Wings.

The wings, both in disposition and construction, are substantially the same as in the former machine. The characteristic wash-out at the root of the lower planes is even more pronounced than was the case in the C.L.II machine. It will be seen from the photograph that the rear spar is bent and twisted by this wash-out. The exact shape of the trailing edge of one of the lower planes is shown in the scale drawings.

Fig. 1 gives a section of the upper wing drawn to scale, and Fig. 2 a comparison of the upper aerofoil of the C.L.IV with the R.A.F.14 section, which is dotted. From Fig. 1 it will be noticed that the three-ply surrounds to the spars are still employed. They are drawn to scale in Fig. 3.

The ailerons remain unaltered in the C.L.IV machine, and this is also true of the interplane and centre section struts.

The attachment of upper wings to centre section and of lower wings to fuselage are unaltered, except that the tube which, in the earlier machine, passed right across the fuselage and connected the spars of the port and starboard lower wings is no longer found. Its place is taken by two fuselage fittings of the type shown in Fig. 4.

Fuselage.

Although the fuselage of the C.L.IV machine is very like that of the C.L.II type, the machine now being described has a body which is practically 3 feet shorter than that of the earlier machine.

Tail Planes and Skid.

It is in these components that the greatest differences between the two types are found. The tail plane is now in one piece

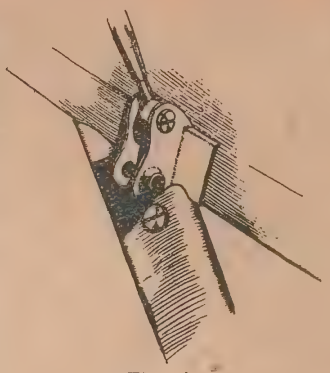


Fig. 4.

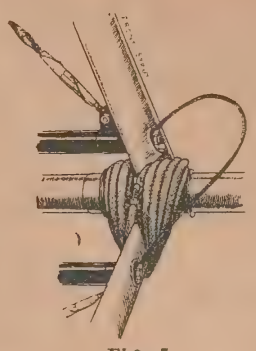


Fig. 5.

and is laid across the rear of the fuselage, and attached there by the bolts shown in Fig. 6. The undivided elevator is now balanced, and the aspect ratio of the whole horizontal tail is larger than was the case in the earlier model. Besides this the actual area is greater. (It has been remarked that the C.L.IV body is 3 feet shorter.)

The fin and rudder were not salved, and comparison is, therefore, not possible, but it is clear from the fuselage design that the fin is a separate unit simply attached to the body, and not

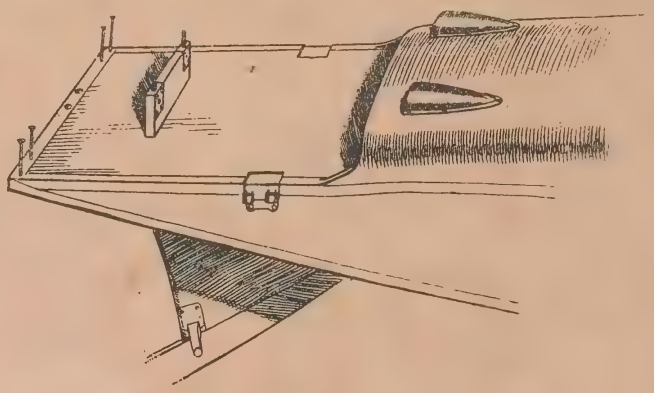


Fig. 6.

an integral part of it. It is also established that the rudder post is now found in the same vertical plane as the leading edge of the elevator. It will be remembered that the rudder post, in the C.L.II type, was fixed more than a foot forward of the elevator fulcrum.

The inverted camber of the C.L.II tail plane is now abolished, and a symmetrical camber substituted, and the rather elaborate tail skid of the earlier model has been simplified to the type found in the modern L.V.G. biplanes. In this type the skid is entirely exposed, and is pivoted on the lower edge of a small triangular fin under the tail plane. (See photograph and General Arrangement drawings.)

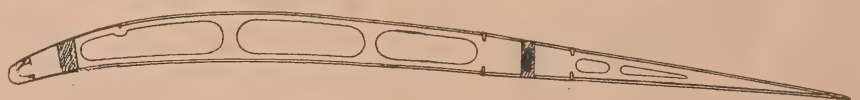


Fig. 1.

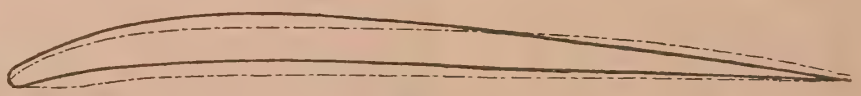
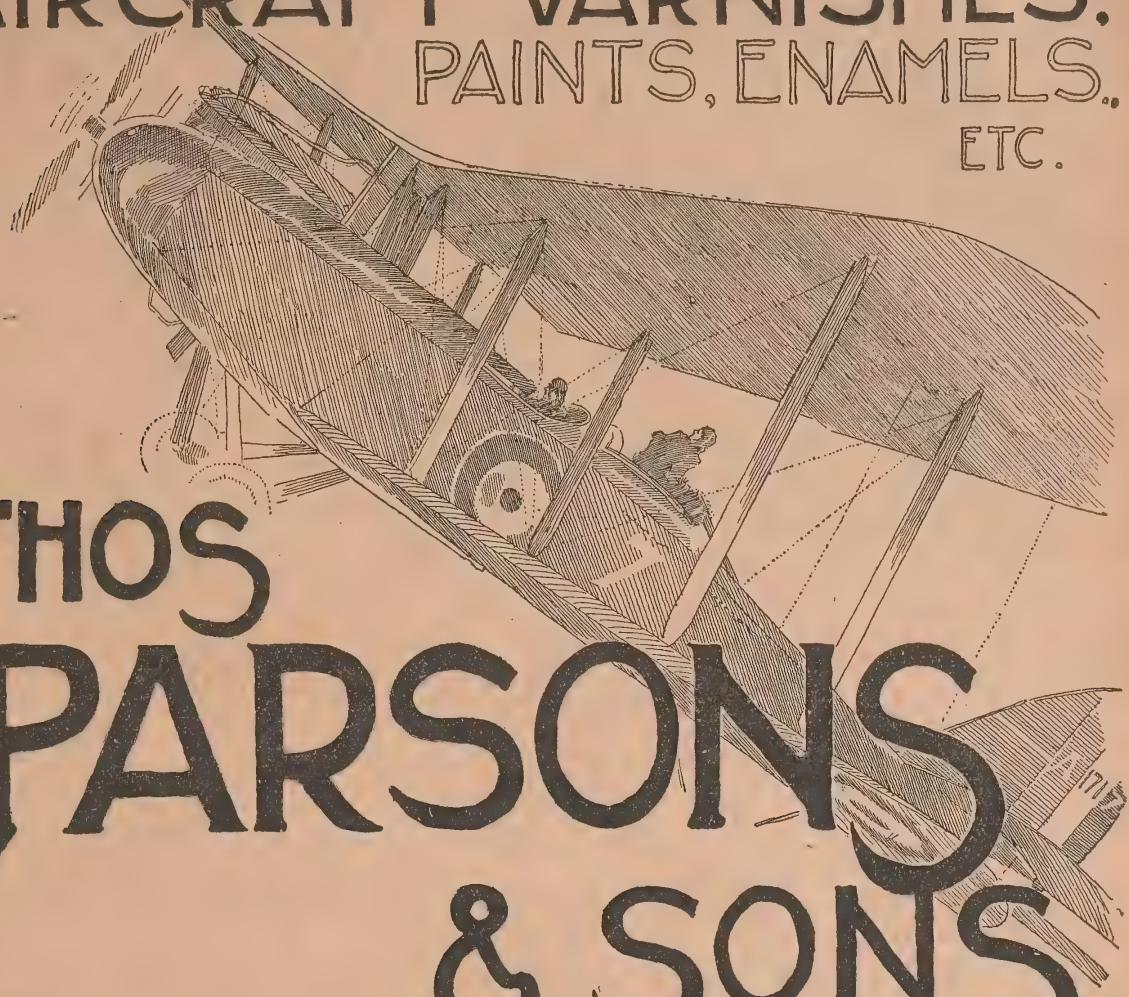


Fig. 2.



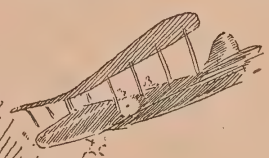
Fig. 3.

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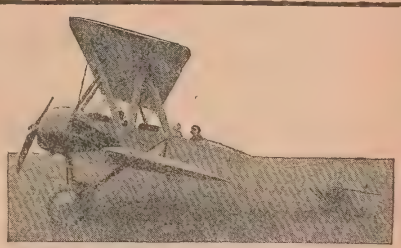
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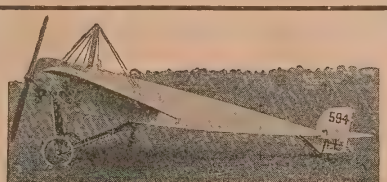
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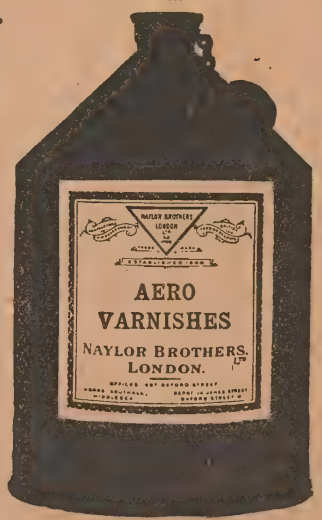
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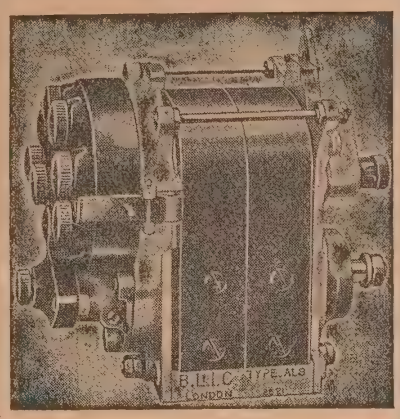


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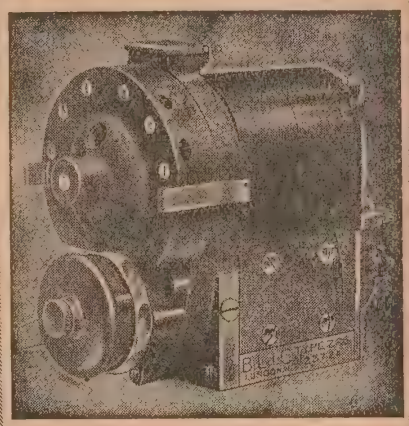
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Aeroplane Manufacturers—

Aircraft Manufacturing Co., Ltd., Hendon. 'Airmanship, Hyde, London" Kingsbury 220.

Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle-on-Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

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Eastbourne Aviation Co., Ltd., Eastbourne. "Aircraft, Eastbourne" Eastbourne 1176.

Glendower Aircratt Co., Ltd. 54, Sussex Place, South Kensington, S.W.7. "Glenacelle, Southkens, London." Kensington 7605 (3 lines).

Grahame-White Company, Ltd., London Aerodrome, Hendon. "Volplane, Hyde, London." Kingsbury 120. London Office, 12, Regent Street, S.W.1. Regent 2084.

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Saunders, S. E., Ltd., East Cowes, I.O.W. "Consuta, East Cowes." Cowes 193.

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Vickers, Ltd., Imperial Court, Basil Street, Knightsbridge. S.W.3 "Vickerfyta, Knights, London." Kensington 6810.

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Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129.

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Whitehead Aircraft (1917), Ltd., Richmond, Surrey. "Whitecraft, Richmond, Surrey." Richmond 1780-1.

Witton & Witton, 143, Fonthill Road, Finsbury Park, London, N.4 North 2110.

Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks. "Aircraft, High Wycombe." High Wycombe 84.

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The Atlas Bedstead Company, Bilston "Atlas, Bilston." Phone No. 8 and 51.

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Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

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J. Avery & Co., 81, Gt. Portland Street, London, W. "Velarium, London." Gerrard 6620.

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Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

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Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

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Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6.

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The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

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Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Beardmore Aero Eng, Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd, Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

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Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

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Belling & Co., Montague Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984

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E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24x.

Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

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Mann, Egerton & Co., Ltd, 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

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Goggles—
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Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

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Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast"
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

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The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
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Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. 'Corlton, Coventry." Coventry 1008-1009.

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Metal Parts and Fittings—
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Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059.
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British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
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Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
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Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

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C. G. Spencer and Sons, Ltd. (See under "Balloons").

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Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
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Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totteridown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8547.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth. Letchworth 26.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 166

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
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Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254. Willesden 2480.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Sheet Metal Work (continued)

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

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Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of KLG Plugs. "Kaelgee, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

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Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

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Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles—

Staffs.

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Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Thomas Parsons & Sons, 315 and 317, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers—

Avenue. 1432.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Watchmakers and Jewellers—

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Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London" Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—

Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Windfector, London." Regent 5910.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—

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Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.

Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.

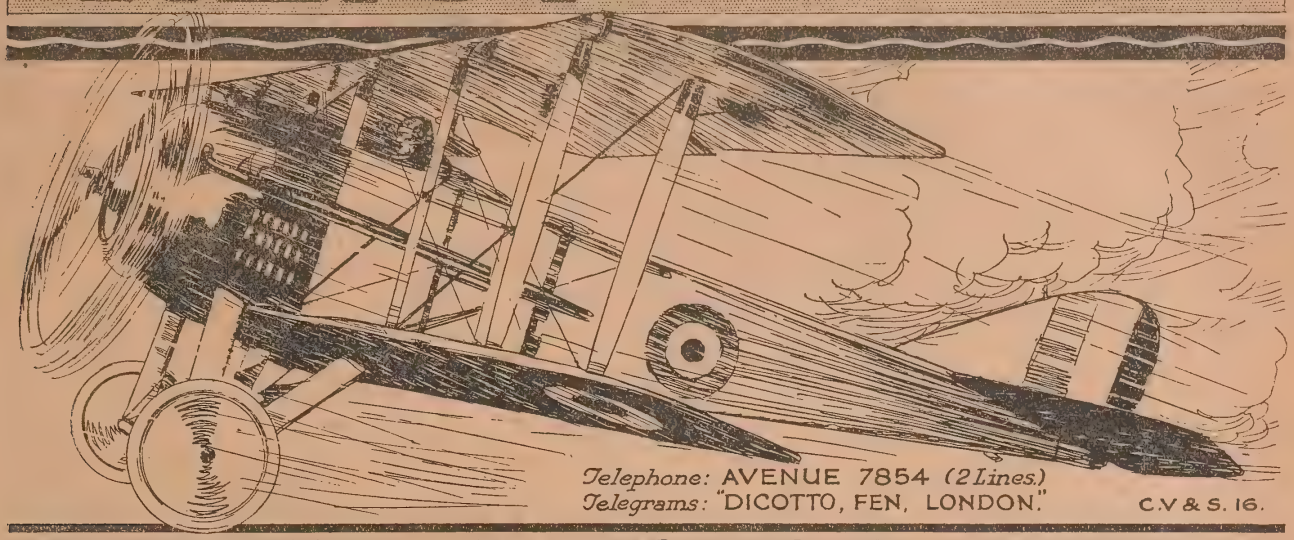
Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.



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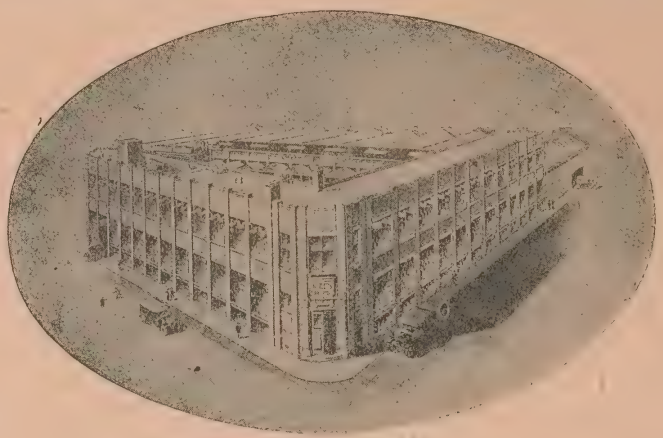
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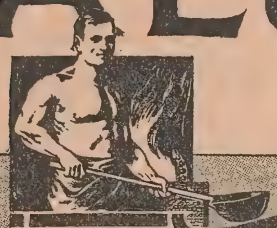
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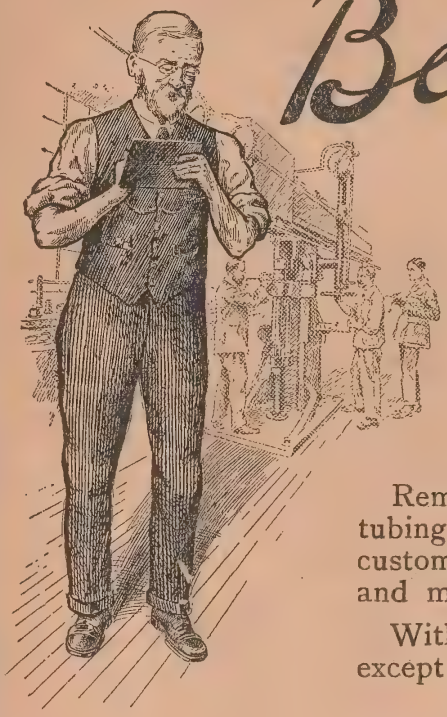
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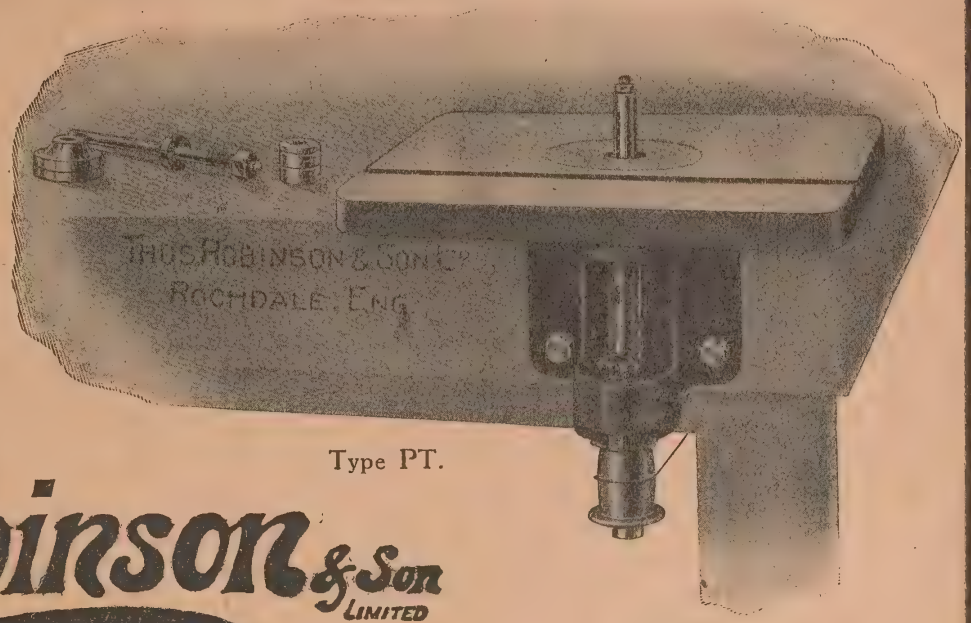
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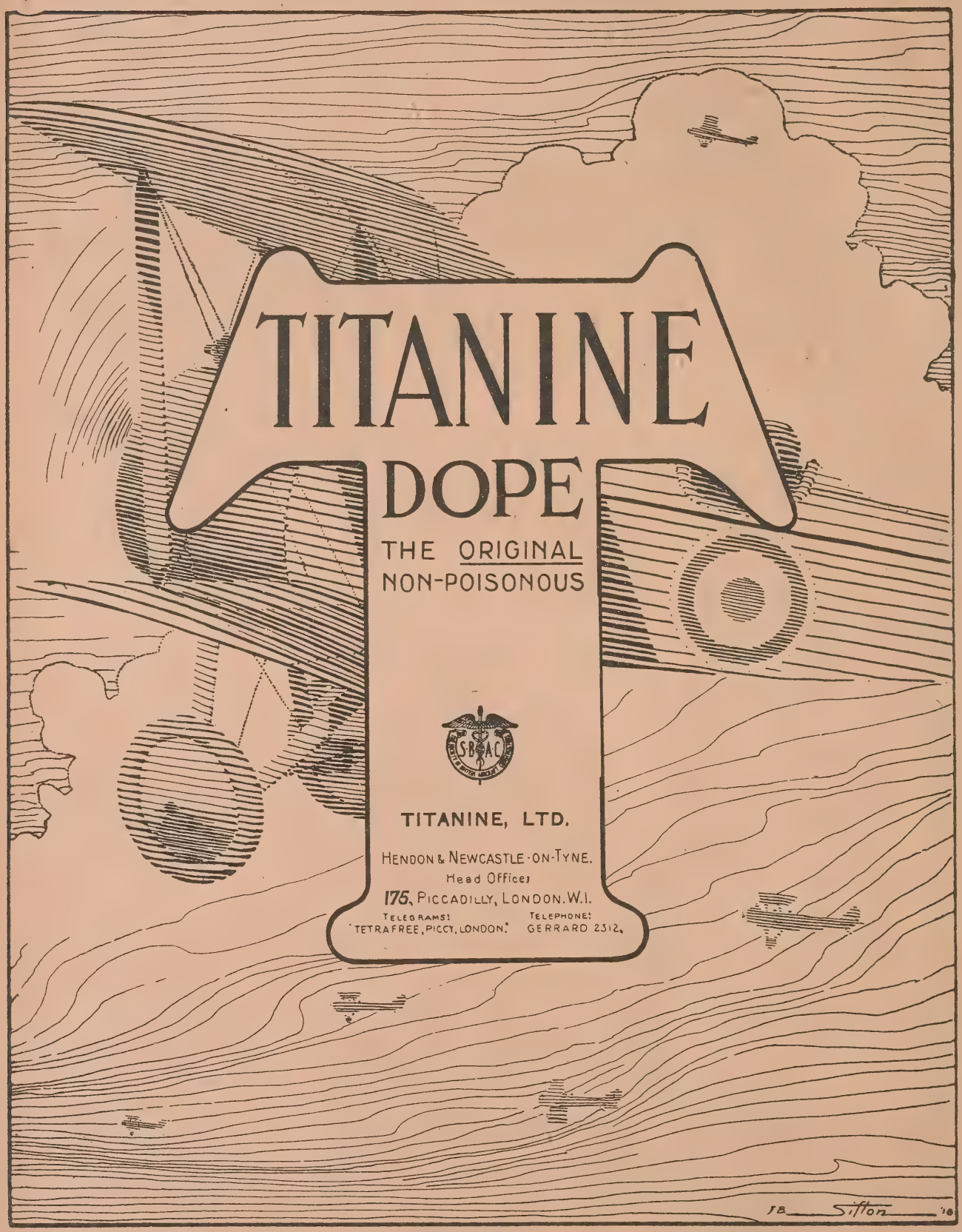
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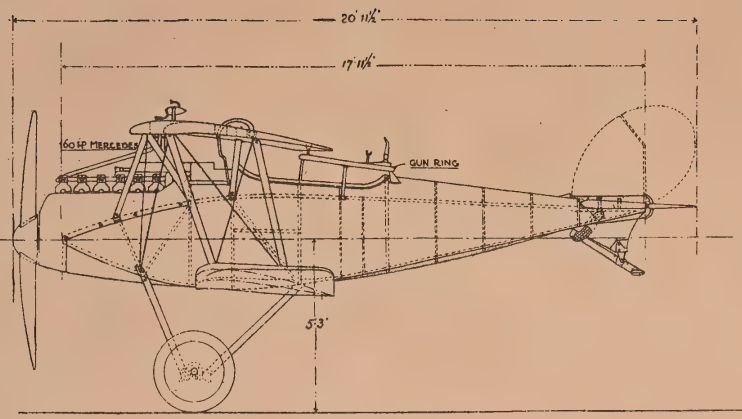
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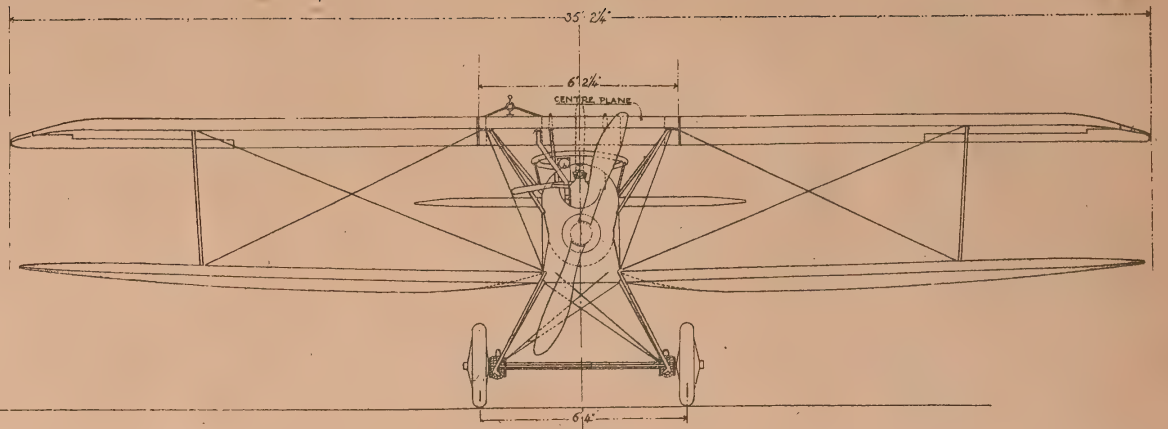
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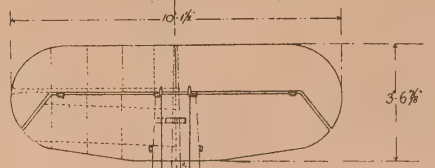
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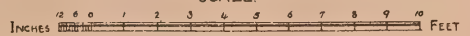






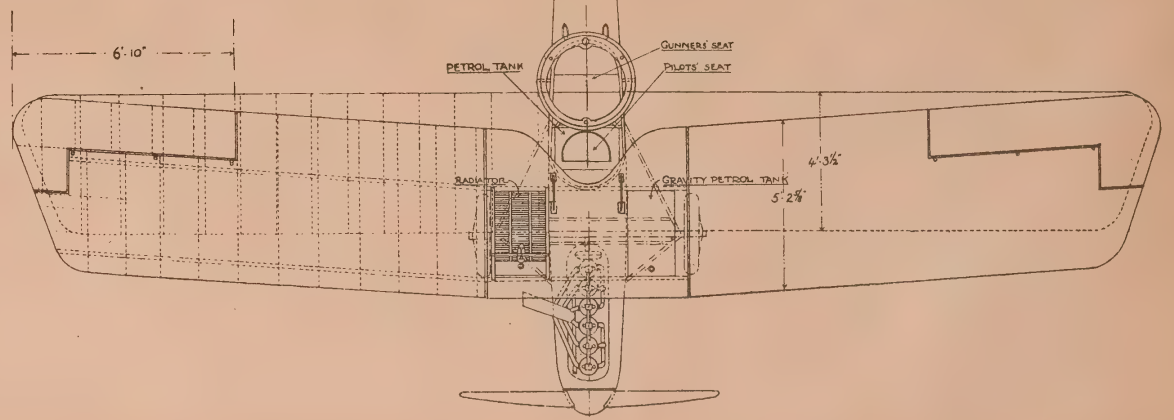
HALBERSTADT C4

SCALE.



GENERAL DETAILS

SPAN UPPER PLANE	35'-2¼"
SPAN LOWER PLANE	34'-9¼"
CHORD UPPER PLANE	5'-2⅝"
CHORD LOWER PLANE	4'-3½"
LENGTH OVERALL	20'-11½"
SPAN TAIL PLANE	10'-1½"
GAP	4'-4" TO 4'-0"
SET BACK OF TOP PLANE	-4°
STAGGER	2-0" TO 1'-2"



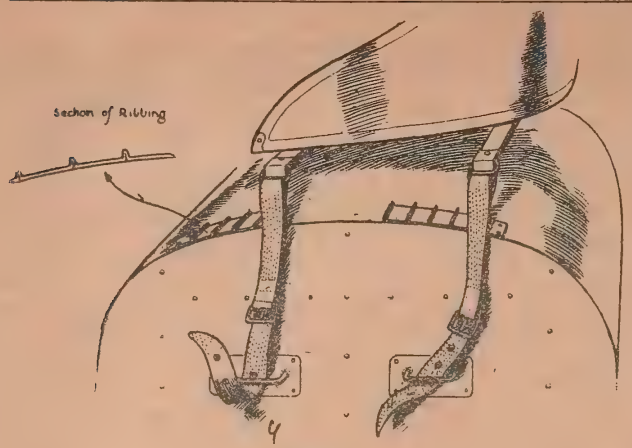


Fig. 7.

Undercarriage.

The landing gear is substantially the same as in the C.L.II machine, but, as may be seen in Fig. 5, two compression tubes now run parallel to the axle, instead of one, as before.

Fittings.

The gun ring has been additionally stayed in front, but otherwise remains the same. It was fitted with a Parabellum gun

Two fixed guns of the Spandau type are arranged for, one each side of the camshaft, but only the one on the starboard side was fitted at the time of capture.

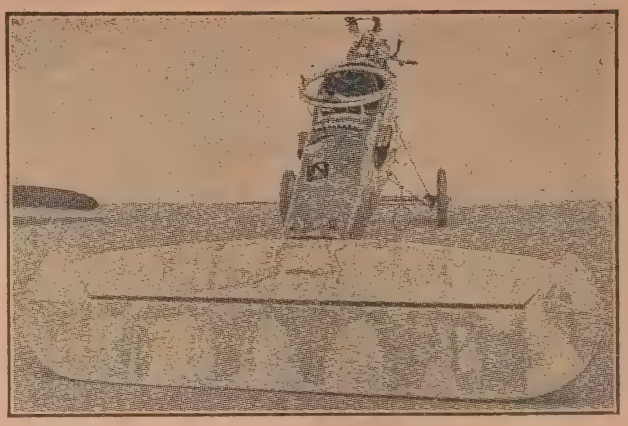
A 10-loop Very cartridge belt is tacked to the top of the fuselage just behind the cockpit—it may be seen in the photograph—and a total of 12 light hand grenades may be carried in the wooden racks, one of which may be seen on either side of the fuselage.

The practice of enclosing the control wires in the cockpit is still continued, but aluminium shields are used instead of the more permanent three-ply construction.

The machine is internally wired, but no wireless apparatus was on board at the time of capture. The dynamo bracket is no longer to be found alongside the engine, but is now on the front port undercarriage strut, and is driven by a propeller.

The pilot's seat is a shallow three-ply bucket, which rests on two cross pieces of wood supported on ribbed brass strips sweated to the top of the petrol tank, thus providing a fair amount of adjustment. This is the subject of a sketch (Fig. 7).

The fabric is throughout of the usual colour-printed type.



Rear View of Tail of Halberstadt.

Schedule of Weights, Halberstadt, C.L.IV.

	lbs.	ozs
Body, with undercarriage, engine, Spandau gun, petrol tank, gauges, and controls	1,220	0
Engine (dry), 180 Mercédès	635	0
Upper wing, complete (no bracing wires)	70	8
Lower wing, complete (with bracing wires)	64	0
Centre section, complete (with struts and wiring)	108	8
Gravity petrol tank	11	4
Radiator	36	0
Centre section strut (Vee)	5	3
Centre section strut (straight)	2	4
Interplane strut (front), with cable	4	8
Interplane strut (rear), with cable	4	0
Undercarriage, complete, approximately	112	0
Shock absorber (one)	4	6
Axle, with bobbins and caps	14	8
Wheel, complete with tyre	20	4
Tyre and tube	8	12
Leading spar of wings (per foot run)	1	4
Trailing spar of wings (per foot run)		14½
Tail plane and elevator (covered)	25	0

The aeroplane is in the Enemy Aircraft View Rooms, Islington.

W. G. A. Ap.D. (L.),
J. G. Weir,
Brigadier-General,
Controller, Technical Department.

FLAX FOR AEROPLANE FABRIC.

The Development Commissioners, whose report for the year ending March 31st, 1918, was issued recently as a Parliamentary paper (118), recommended during the year advances amounting to £191,797.

In one instance—that of flax growing—the expansion owing to war needs has led to such an increase of the undertaking that it is no longer of an experimental or educational nature. In the previous year the Commissioners granted £6,750 to the British Flax and Hemp Growers' Society, and in 1917-18 a supplementary grant of £15,450 was made for an extension of the society's work in order to ensure a future supply of material for the production of aeroplane cloth and to increase the growth of linseed as a feeding stuff for stock. This was followed by an application for an advance of £205,700, of which £200,000 was by way of a loan for the initiation of an extended programme for the cultivation of flax in Great Britain and its production into fibre. The growing of flax for fibre on the extended scale carried the undertaking outside the experimental or demonstrative sphere appropriate for aid from the Development Fund, and after the application referred to had been received arrangements were made for the whole of the society's flax-growing work to be taken over by the Board of Agriculture.

THE WORKING OF MAGNETOS.

Some time ago Mr. A. P. Young, A.M.I.E.E., A.I.A.E., read a most interesting and highly informative paper before the Royal Aeronautical Society of Great Britain on the subject of the high-tension magneto, with special reference to the ignition of aeroplane engines. The paper was too long to publish in extenso in the aeronautical press, and the audience naturally was not sufficiently large to absorb, so far as the Aircraft Industry is concerned, anything like the full value of the paper. Therefore, the British Thomson-Houston Co., Ltd., has very wisely reprinted the whole paper in the form of a booklet. Unfortunately, the number of these booklets is necessarily limited, and the bulk of them have already been distributed, but one learns that there are still a certain number of copies available. Members of the R.A.F. or of the Aircraft Industry, who are sufficiently keen on their work to wish to understand thoroughly the operation of the magneto, will, therefore, do well to obtain a copy of this booklet, which may be obtained gratis on application to Mr. A. P. Young at the offices of the British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry.

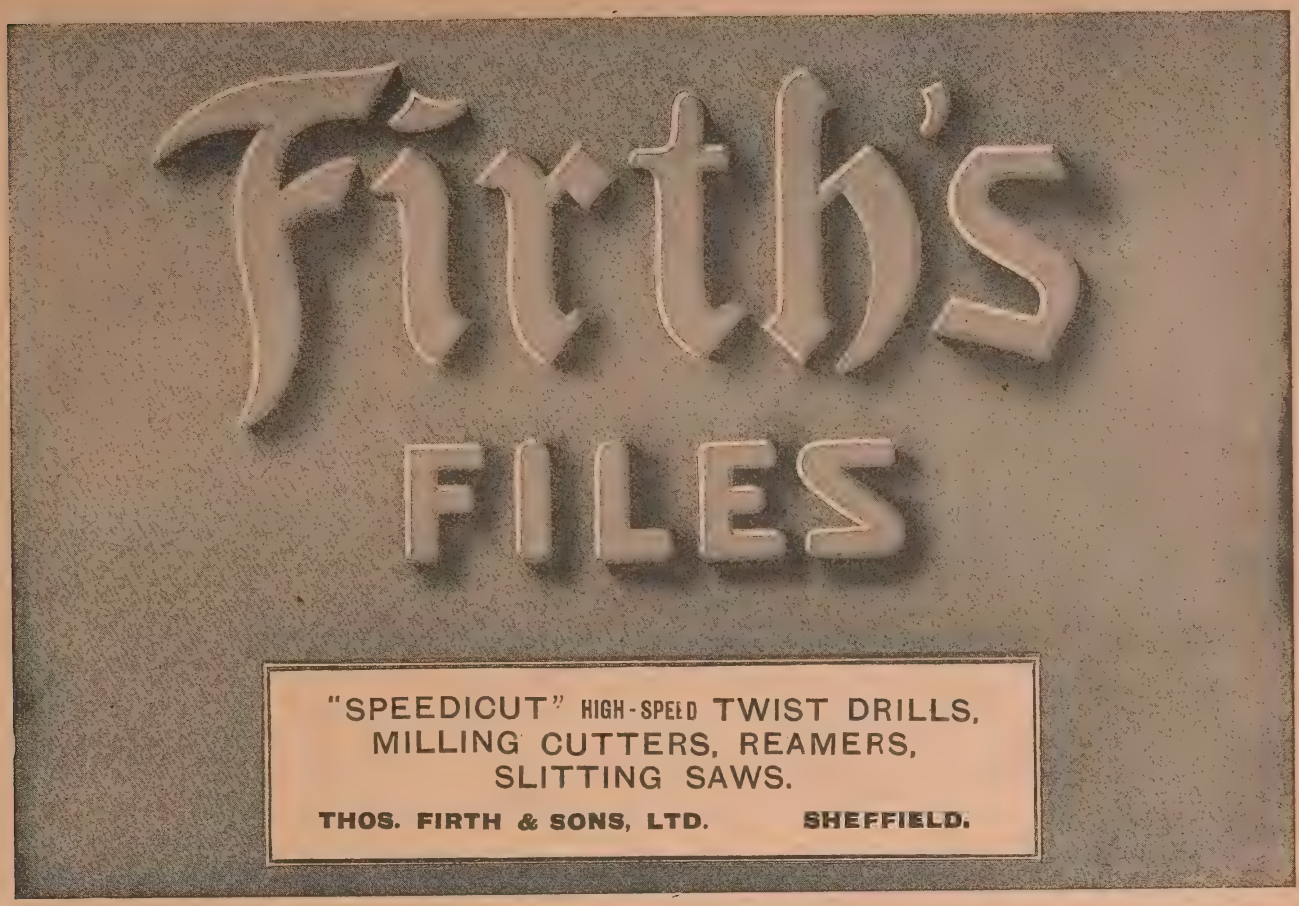
Those who are likely to find Mr. Young's second paper rather above their weight at first who wish to obtain some more elementary knowledge of the operation of the magneto before tackling the more advanced instruction in Mr. Young's second paper, will do well to apply at the same time for a copy of his earlier paper, which was read before the Coventry Engineering Society in January, 1915. This booklet may also be obtained on the same terms by members of the R.A.F. and of the Aircraft Industry. Anybody who has thoroughly studied the two papers will have, at any rate, a thorough working knowledge of the modern magneto, and will be duly grateful to Mr. Young and the B.T.-H. Co. for having placed so much valuable information at their disposal for nothing.

A SPENCER EXTENSION.

The extensive Balloon Hall at Aberdeen Lane, Highbury Grove, N.5, which has been erected by C. G. Spencer and Sons, Ltd., aeronautical engineers, was opened by Mrs. L. T. Spencer, wife of Mr. Arthur C. Spencer, chairman of the company, on Friday afternoon, Nov. 22nd.

A large number of the staff, who were present, appeared to be very satisfied with the arrangements which had been made for their comfort, and they praised the general arrangements of the building and the offices which adjoined.

At the opening ceremony, the managing director, Mr. E. Allen, said that he had pleasure in asking Mrs. L. T. Spencer to lay the opening stone, and to declare the works ready for occupation. Mrs. Spencer then duly laid the stone and christened the building with a bottle of champagne, whilst the audience applauded. She afterwards made a speech wishing success to the new venture, and, although the war was over, she hoped that there would be plenty of work for everyone, but that they would then be manufacturing articles of a more peaceful nature.



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The Properties of Steels in Relation to Variations in Temperature.

On Thursday, December 5th, the third meeting of the Royal Aeronautical Society was held at the Society of Arts Lecture Theatre, Adelphi, when a lecture, which was to have been given by Brig.-Gen. Bagnall-Wild, R.A.F., who was unfortunately absent through illness, was delivered by Major Philpot, R.A.F. The title of the lecture was to have been "Shop Practice in Respect to Aircraft Steels," but the main theme treated of the properties of steels in relation to variations in temperature.

The Chairman, Sir Robert Hadfield, F.R.S., who had kindly placed on view a number of specimens and diagrams concerning the subject of the lecture, paid an eloquent tribute to the R.A.F.

Sir Robert Hadfield emphasised the necessity for the use of sound steel in engineering generally, as well as in the construction of aeroplanes. He pointed out that the great difficulty which had to be overcome in the past was to prevent the oxidation of iron at high temperatures, as naturally this tendency was vastly greater in the case of the molten metal than in iron exposed to the ordinary action of the atmosphere where the oxidation was sufficiently great. Many difficulties were encountered in the early days of steel production, when scientific research did not exist, so far as manufacture was concerned.

Sir Robert exhibited a large diagram of a hydraulic cylinder manufactured by his firm, 26 ft. 10 ins. long by 15 ins. diameter, which consisted of a dropped steel casting, an exceptionally difficult job, because the steel ran many risks in its descent into so long a mould as was necessary. This cylinder would stand an hydraulic pressure of four tons per square inch, and under its ordinary working load in a cotton press it endured a constant strain of three tons per square inch.

The Chairman said that many years ago his father went nearly bankrupt over an attempt to make cylinders of a similar nature. The big difficulty which was encountered was the unsatisfactory composition of the steel, a large proportion of the carbon in which went out into graphite on annealing, rendering the cylinder porous so that it could not stand the enormous water pressure, and in consequence the water actually oozed through the walls of the cylinder and reduced the pressure so that the press was useless.

Turning to war-time conditions, the Chairman spoke of the many new and interesting steels which had been produced during the past four years, particularly with regard to aircraft work, many of which would soon become remarkably cheap because they contained no expensive elements.

THE LECTURE.

Major Philpot asked the indulgence of the older and more experienced persons present, as he said it had been the intention of General Bagnall-Wild to address his remarks principally to the student members of the Society. In order to portray clearly the changes in structure of steels under varying conditions of temperature, the lecturer proceeded to adopt the analogy of a salt which was insoluble in ice, but dissolved in water, which would therefore precipitate as the water froze.

It had been found that a solution of 37 per cent. sodium nitrate, when cooled, freezes in such a manner that the ice and the salt solidify simultaneously, forming alternate plates of ice and crystals. When a weaker solution is subjected to the freezing process, ice commences to form before the precipitation of the salt, and if it could be assumed that gravity did not enter into the argument, the vessel under these circumstances would contain a liquid solution in which were suspended globules of ice. This condition of affairs would exist until the original 37 per cent. solution was attained, and then the contents of the vessel would resolve themselves into successive plates of ice and crystal. On the other hand, in the case of a very much richer solution, a falling temperature would result in the precipitation of the salt until the critical point of 37 per cent. was reached, and then once more the water would proceed to solidify simultaneously with the remaining salt, but separately.

These varying physical conditions found in the freezing of salt solutions of different strengths, represented very closely the condition of steels undergoing variations in temperature.

THE EFFECT OF RISE IN TEMPERATURE.

The lecturer then proceeded to define the various constituents of steel alloys such as ferrite, which represented pure iron, and pearlite, which represented a mechanical mixture of iron and iron carbide, and he explained how these ingredients at high temperatures went into solution long before melting point was actually reached, resulting in the most profound changes in the structure and therefore in the physical properties of the steel. He also explained how the properties of the steels could be varied, and the critical temperatures altered by the addition of alloys. For example, in a .45 carbon steel the molecular change occurred at about 750 deg. F., and the change was fully completed during a rise of a few degrees. During this time a considerable amount of heat was absorbed by the resolution of the elements into the solution. Curiously enough, the reverse process, that of recrystallisation, is the result of cooling taking place at a lower degree of temperature than that or the change during heating.

Other grades of steel had widely differing properties. For instance, 5 per cent. nickel steel withstood a considerably higher degree of temperature before arriving at its critical point, but, in cooling, the temperature at which the change took place was very much lower. Advantage of this phenomenon was taken in the heat treatment of steels.

CAUSES OF FAILURE.

After exhibiting a lantern diagram of the extraordinary variations which could be obtained in the physical properties of a steel by different heat treatments, Major Philpot proceeded to give a number of illustrations of failures in steel structures, some of which originated in the steel foundry, and some in the manufacture of the actual articles from the raw material. In certain cases the failures were due to sheer carelessness, but in many others they were the result of insufficient knowledge regarding the physical properties of steel before and after working and before and after heat treatment.

Welding was a grave source of danger, because any overheating destroyed the designed structure of the steel and entirely altered its strength, and failure was then courted.

In a similar way attempts were not always made to restore the condition of steel after stamping, when similar trouble was likely to be experienced. Another grave danger was the use of wrong material. For instance, selection of incorrect steel which had become mixed up in store. On occasion wrought iron had been employed where steel was intended. Another danger which had to be watched was the possibility of varying carbon.

The lecturer showed a succession of photographs of broken crankshafts, the failure of which in most cases he attributed to incorrect practice in forging. He also drew attention to the danger of altering the molecular construction of steel during case-hardening and in too violent bar drawing.

Difficulties also were encountered in rolling steel without damaging its structure, and a particularly difficult case was experienced in rolling circular section bar into the streamline Rafwire. The lecturer gave an illustration showing a truly lamentable case, one of many it is to be feared, where a Rafwire had failed in the air owing to bad rolling.

THE DISCUSSION.

Dr. Hatfield, of the Brown-Firth Laboratory, paid an eloquent tribute to General Bagnall-Wild. He recalled how, at the commencement of the war, the Aeronautical Inspection Department was a very small concern indeed, numbering probably 50 or 60 people under General Bagnall-Wild, who was then only a captain.

[N.B.—This is untrue. The A.I.D. numbered several hundreds of people, and was under Major J. D. B. Fulton, C.B. Captain Bagnall-Wild was then in the motor trade.—Ed.]

Since then the necessities of the situation involved a continuous and great increase in personnel, and Dr. Hatfield thought that it was a remarkable tribute to the ability of Gen. Bagnall-Wild that he had been able to command the Department right through until the present time, when, with the rank of brigadier-general, he was chief of several thousands of people.

A CAUTION AGAINST WELDING.

Dr. Hatfield said that it was remarkable how many specifications of special steels now existed, and said that the steel manufacturers were very much indebted to the Department for its help in evolving special steels for aircraft purposes. He spoke very strongly against the practice of employing welding anywhere in aircraft construction. Specimen tests conducted with care were very impressive, but as regards quantity production, too much was left to the individual responsibility of the workers, who could very easily cause dangerous damage through overheating and oxidising the steel on which they were working.

EDUCATING THE WORKERS.

Mr. Fawcett, of Thomas Firth and Son, Ltd., said that the members of the Aeronautical Society could best understand how steel was made by seeing its manufacture for themselves on a practical basis, and invited the Society to visit his firm's works and see everything for themselves. He pointed to the necessity for educating the workers on the nature of their material.

The Chairman concluded the proceedings by rapidly reviewing the work of the last 50 years, which he hoped would constitute a source of inspiration to the many young men present. He also believed that workers should be more adequately educated in such a manner as would give them a higher interest in life in general and in their work. If this was done, they would demand higher wages, but this could well be afforded with advantage to everyone concerned.

A.B.C.

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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records :—

PATENTS APPLICATIONS.

Baron, J. G. Interchangeable jig or machine for making repetition parts for aeroplane ribs, etc. No. 19724 Nov. 29th.

Blackburn Aeroplane and Motor Co. Construction of spars for wings of flying-machines. No. 19375. Nov 25th.

Blackburn Aeroplane and Motor Co. Aircraft. No. 19376. Nov. 25th.

Blackburn Aeroplane and Motor Co. Construction of ribs, spars, for wings, etc., of aircraft. No. 19448. Nov. 26th.

Clark, G. Radiators for engines of motor-vehicles, aeroplanes, etc. No. 19555. Nov. 27th.

Cleghorn, C. A. Balloon fabrics, etc. No. 19565. Nov. 27th.

Evans, R. R. Signalling and/or indicating to aeronauts, names of places or latitude and longitude thereof. No. 19783. Nov. 29th.

Goodwill, G. Instruments for ascertaining speed of aircraft. No. 19479. Nov. 26th.

Hill, F. W. Automatic sight for use with heavy guns in aircraft against ground targets. No. 19547. Nov. 27th.

Jordon, G. Profile setting and making table for aeroplane ribs, etc. No. 19513. Nov. 27th.

Knudsen, H. Automatic balancing-apparatus for aerial machines. No. 19693. Nov. 28th.

Mooney, D. J. Metal spars, longerons, etc., for aviation. No. 19646. Nov. 28th.

Nada, C Manufacturer of wooden screw propellers for aviation, etc. No. 19393. Nov. 25th.

Palson, H. Aircraft. No. 19637. Nov. 28th.

Parker, H. F. Aerial machines. No. 19618. Nov. 27th.

Silk, R. A. Aerial compass swinging platform. No. 19418. Nov. 26th.

Soc. L. Breguet. Aeroplanes. No. 19564. Nov. 25th.

Soc. des Moteurs Salmson. Device for fixing engine in aeroplane. No. 19579. Nov. 27th.

Soc. des Moteurs Salmson. Tail-piece for aeroplanes. No. 19580. Nov. 27th.

Soc. des Moteurs Salmson. Metal fittings for assembling longitudinals and uprights in aeroplanes. No. 19581. Nov. 27th.

Soc. des Moteurs Salmson. Junction for connecting structural members of aeroplane. No. 19582. Nov. 27th.

Soc. des Moteurs Salmson. Metal fitting for aeroplanes for fixing ribs of the horizontal rudder on shaft of said rudder. No. 19583. Nov. 27th.

Soc. des Moteurs Salmson. Metal-fitting for connecting structural members of aeroplane. No. 19584. Nov 27th.

Suffit, R. Courtois. Landing indicator for aerial machines. No. 19839. Nov. 30th.

COMPLETE SPECIFICATIONS ACCEPTED, PRINTS OF WHICH CAN BE OBTAINED ON AND AFTER DEC. 18TH, 1918.

120,742. Nov. 21st, 1917. Edwards, E. A. Aircraft.

120,743. Feb. 28th, 1918. Guise, H. J. Propelling means for aircraft.

120,765. Nov. 20th, 1917. England, R. D. Method for the manufacture of aircraft airscrews and aircraft members.

120,777. Nov. 22nd, 1917. Cragg, E. Aeroplanes.

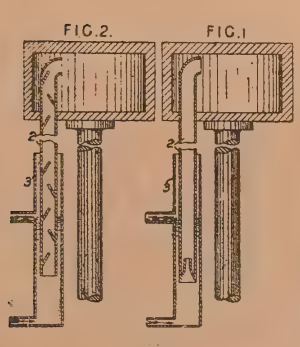
120,788. Nov. 29th, 1917. Chamier, F. W. Systems of and apparatus for defence against attack by hostile aircraft.

120,791. Dec. 1st, 1917. Foot, R. G. Air propellers.

120,824. Jan. 2nd, 1918. Jackson, W. J. Mellersh (India Rubber Co.) Processes for producing pigmented rubbers and the products obtained thereby.

120,849. April 17th, 1918. Grandjean, H. A. Screw propulsion.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.



119,467. Pistons. NEDERLANDSCHE FABRIEK VAN WERKTUIGEN EN SPOORWEG-MATERIEEL GENAAMD "WERKSPOOR," Amsterdam.

Cooling liquid is supplied to the piston of an internal-combustion engine by a pipe 2 provided with inclined vanes or a nozzle in its interior, or with a series of openings with a closed lower end. This pipe reciprocates in a stationary tube 3 in which the liquid is kept at a constant level. The reciprocation of the piston causes the liquid to pass to its interior.

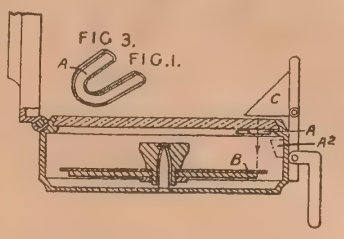
119,403. Rivets. JOCELYNE, H. J., and BIFURCATED AND TUBULAR RIVET CO., 235, Upper Thames Street, London.



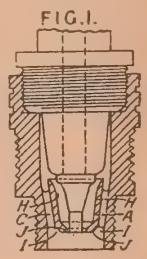
A rivet for use with leather, wood, or metal comprises a cylindrical pin 2 and socket 4, both headed, and engaging tightly together by friction only.

119,356. Magnetic compasses; dials. RYLAND, C. F., 109, Michael's Road, Aldershot.

Non-transparent dials of prismatic compasses and like instruments are illuminated by a patch of luminous compound situated above or at the side of the dial near the place where the reading is taken. In the form shown, the compound is inserted in the underside of a U-shaped metal trough A secured beneath the cover glass. The shape of the trough enables a reading on the dial B to be taken by the prism C between the limbs of the U. Or the compound may be placed at A^2, or, in instruments having a lens in lieu of a prism, at the opposite side of the casing.

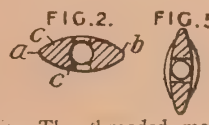


119,383. Sparking-plugs. HEATH, A. E. S., 8, Salcombe Gardens, North Side, Clapham Common, London.



The plug body is formed with a baffle A with perforations C arranged so as to direct the gases away from the insulator surface. The baffle may be extended so as to form annular grooves H, I and a forward flange J. The central electrode is tapered towards its inner end.

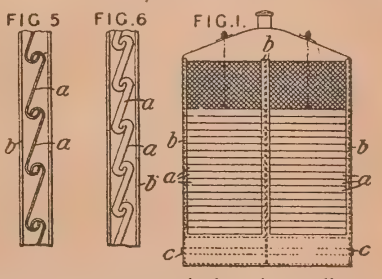
119,392. Wire-strainers. BRACKENSIECK, A. H., 8, Arden Road, Church End, Finchley, London.



Strainers for aeroplane, etc., stay wires are made of streamline form in cross-section as shown in Fig. 2, the forward and rear edges *a*, *b* of the sleeve being arcs of small radius, while the sides *c* are arcs of larger radius. When applied to open turnbuckles, the form is that shown in Fig. 5. The threaded members entering the sleeve may be eye, T-headed, shackle-ended, or other bolts as desired.

119,375. Radiators and aircraft. SAUNDERS, LTD., S. E., and THOMAS, H. H., Columbine Works, Medina Road, East Cowes, Isle of Wight.

The admission of air to aircraft radiators is controlled by one or more roller blinds consisting of articulated links or strips *a*, Figs. 5 and 6. Two such blinds, each covering half of the front of the radiator, may be drawn upwards in the guides *b* by unwinding them from the spring roller *c*, Fig 1, by cords attached to a winding-drum. In a modified construction, the two halves of the blind are of the blind are mounted on separate vertical spring rollers arranged at opposite sides of the radiator, and move horizontally to meet at the centre of the radiator. The blinds may be recessed at their meeting edges to pass round the propeller shaft of the motor.



AN ENGINE EXTRAORDINARY.

The following Exchange telegram dated Dec. 2nd may be of some interest :—

Nearly all the aeroplanes exacted from Germany by the Armistice Convention are now in possession of the Allies. Among the machines thus obtained are several recent types, of which none had been captured in the fighting.

Notable among them is a fighting biplane, with Roland rotative motor, of the Obermset class, which is believed to be superior to all other engines. Numerous armoured aeroplanes specially constructed for attacking infantry have also been given up.

[One has heard of the Roland biplane (otherwise the L.F.G.), and of the Oberursel engine, but the Obermser seems new, besides being a word unlike any among the known languages. Our old friend "Exchange" seems a trifle mixed.—Ed.]

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COMMERCIAL AERONAUTICS

A PILOT'S TRADE UNION.

By "Medway."

In the best interests of commercial aeronautics there is a great deal to be said in favour of the proposal to establish a Pilot's Trade Union. Presumably, the rules of such a Union would be such that only thoroughly well-qualified men would be admitted to membership. The Union would need to have strong powers in this matter, and also as regards the withdrawal of membership in the event of any member behaving in such a manner as to discredit the profession or endanger the passengers carried. The governing body of the Union would, no doubt, immediately and permanently remove anyone guilty of unprofessional behaviour or wilful neglect of his duties.

Doubtless the Government will presently exercise some control over all commercial aeronautical services, and certainly over all those engaged in the carriage of paying passengers. The Union should be able to insure that one of the regulations imposed by the Government shall be that no passenger-carrying aeroplanes shall be piloted by a man who is not a member of the Union. Any such monopoly to the members would need to be accompanied by some guarantee to prevent the Union from putting up the cost of piloting to an absurdly high figure.

The Fixing of Wages.

The status of the commercial pilot would have to be periodically reviewed and the minimum and maximum salaries agreed. It would be hopeless to attempt now to fix a minimum once and for all. The value of money changes, and, moreover, we do not know whether in ten years' time the commercial pilot will be more nearly classified with the locomotive driver and the chauffeur, or with the captain of a cargo vessel or of a passenger liner. Much depends on whether the pilot will be required to possess considerable scientific knowledge, not only of his engine and mechanism, but of meteorological phenomena, air currents, observations, wireless telegraphy, and so on.

We do not yet know how much we shall have to depend upon the man, or how much responsibility may be taken off the man by the system that may be evolved. Neither do we know exactly what are the views of the military authorities as to the future status of the pilots in the Royal Air Force. It may well be that there will be various grades occupying commissioned and non-commissioned positions in the Force or in its Reserve, according to the scientific knowledge with which they can back their practical ability to pilot an aeroplane.

It seems clear that no Trade Union of Pilots could be thoroughly successful unless it was fairly thoroughly supported by the Government, or, alternatively, unless it were of a general international character.

Foreign Competition.

If the British pilots tried to maintain their own rates of salary without Government assistance, there would be nothing to prevent their being undercut by foreigners, and it is clear that we cannot altogether exclude the foreigner from participation in services running between this and other countries. Foreign Governments are not likely to allow the free use of their air without some return in the shape of the employment of their men and material. Moreover, without Government assistance it would be very difficult for the Union to prevent the employment of blacklegs, undercutting the standard rates. On the other hand, Government recognition would, as already suggested, entail the provision of maximum as well as minimum rates of payment in the interests of the public using the services. For the present the minimum is the more important. The public must be impressed with the safety of aerial services, and this result can never be obtained if cheap and inexperienced men are given more responsibility than they can carry.

CIVIL AERIAL TRANSPORT.

French Postal Intentions.

The Paris "Journal," Nov. 17th, says that it has reason to believe that the Administration of Posts and Telegraphs is considering, with the Inter-Ministerial Committee on Civil Aeronautics, a programme for a French aerial postal service comprising the creation of some twenty internal and international aerial postal lines.

These lines will start from Paris, and radiate to the principal towns of France, with junctions at the frontiers with the great centres in foreign countries, as in the case of the great railway lines.

Italy.

As soon as the present urgent Military needs have ceased to be urgent, the postal services between the various Adriatic ports which are now being run "on H.M.S." will be thrown open to the public. The Ministers involved are naturally alive to the importance of the post being constantly in wireless communication with the central land stations, and of doing everything within mortal power to guarantee the arrival of the mail to schedule.

The Tripoli and Corsica routes are almost certain to be the first ones open to the public, and the former will not terminate at the coastline. The example of France in Algiers will be followed, and the larger oases are to be linked up to the capital. It has to be borne in mind that the Mediterranean Sea has an exceptionally inconstant climate, and therefore land will be kept in sight as much as possible.

As well as the Armistice booty, I hear that the Austro-Hungry'uns left nearly 300 K-type seaplanes at Pola, and also—kind thought—about a hundred spare motors for them. So the Naval "airmen" have about 1,000 black crosses to paint or wash out.

The National Aero League has secured the support of the Hon. E. Chiesa, the High Commissary for Aviation, for a grand aero show at Milan. It will not be held till peace is signed.

I hear there is likely to be a slump in common old-fashioned touring maps, which are to be supplanted by photographic reliefs taken from aeroplanes.—T. S. HARVEY.

U.S.A.

The U.S. Post Office Department has issued a report of operation and maintenance of the Aerial-Mail Service for August, 1918. This report shows a profit of 4,983.91 dols. for the month, the first month that any profit has been made. The deficit for June and July amounts to 13,608.53 dols., therefore the profit for August reduces the losses of the Service to 8,624.62 dols., which, it is hoped, will be further reduced during the next months.

Fourteen machines were utilised for carrying mail during August, and they covered a total mileage of 15,120 in 203 hours 1 minute, actual flying time. In this time 3,510 gallons of petrol were consumed, which averages 4.3 miles per gallon. Counting all expenses incurred in running the Service during August, the cost per mile averages 0.6319 dols. per mile.

Following are the receipts and expenditure for August:—

	Dols.
5,679 lbs. of mail at 16c. per oz.	14,538.24
15,120 miles covered at average cost of 0.6319 dols. per mile	9,554.33
Profit for August, 1918	4,983.91

Depreciation is not estimated in the report, for lack of convincing data, but is reflected in the repairs, parts, and labour items, which are included in general expenses.

Admiral Peary has recently completed a survey of the Transcontinental airways in the United States. The main routes he has mapped are as follows:—

First Route: A straight line from New York to San Francisco, touching Cleveland, Toledo, and Chicago.

Second Route: From Washington to San Diego (California) through Georgia, Alabama, Louisiana, Texas, and Arizona.

Third Route: From Philadelphia to Santa Barbara (California) through Pittsburg, Columbus, Indianapolis, St. Louis, Kansas City.

Fourth Route: From Boston to Seattle and Portland (Oregon), touching Albany, Syracuse, and Detroit.

Fifth Route: From Newport News (Virginia) to Los Angeles (California), touching important cities and towns on the way.

Sixth Route: On the Atlantic seaboard from Bangor (Maine) to Key West (Florida), touching every city on the coast.

Seventh Route: From Key West to the mouth of the Rio Grande, following the coast and touching every city on the Gulf seaboard.

Eighth Route: Pacific Coast line, connecting all cities on the seaboard between San Diego and Puget Sound. R. M.

THE BRITISH AIRCRAFT INDUSTRY.

Those of us who have a real and abiding interest in the future of the Aircraft Industry have latterly become fearful lest certain Syro-Phœnicians and others should meddle with the new-born business to its ultimate undoing. There are far too many bright-eyed publicists about with edged tools of their own to grind; and because of this the advent of such a book as "The British Aircraft Industry" (published for the "Times" by Hodder and Stoughton at six shillings) is especially to be commended.

There is always a possibility that the sober and responsible business element, which is even now quietly weighing the potentialities and limitations of aeronautical transport, might be carried off its feet by some of the blatant and ignorant "boosting" which the industry is receiving at the hands of the ill-informed and unexperienced. A book such as this, literally stuffed by considered fact, and written by the pen of authority, may do much to dissipate the clouds of hot air on which the more unscrupulous are endeavouring to waft their paperplanes aloft.

The merchant who is sitting watchful on the fence could have no better nor more responsible guides in his difficulty than such well-known contributors as the publishers have secured. Each name, I may say, is well and honourably known in connection with the steady betterment of aviation.

The book falls roughly into two sections: one of which is a readable recapitulation of the early history of the aeroplane and airship, branching later into a number of interesting treatises on the machines, their components, and their fabrication; and the other, more constructive in vein, which aims at predicting in the light of reason and past accomplishment (aided and checked always by expert technical knowledge) what the future may hold for the commercial aeroplane and its uncertain sister, the airship.

With the early part of the book, which traces the evolution of the flying machine from the days when Bellerophon muffed his controls on the back of Pegasus, up to the advent of the last Gotha, our informed public is less concerned. It is admirably non-technical, and the many facts presented are so set forth that they strike the imagination.

For instance, it must come as a shock to the lay reader, or even to the technical public that has not thought on the matter, to learn that man is already able to fly better than the birds. "The aeroplane gets off the ground with a shorter run, in proportion to its size and weight and speed, than any bird. It flies very much faster than the fastest bird. It can fly in weather which no bird could face. It can fly greater distances without alighting than any bird can cover. It can fly to greater heights than any bird can reach. These statements, strange as they may seem, are proven facts."

But the chapter on the commercial potentialities of flying is full of sane suggestion that should interest us. Outlining at the commencement the obvious limitations that inhibit the use of aircraft for journeys up to 150 or 200 miles, the writer goes at some length into the presumed cost of establishing aerial communication, arriving at the conclusion that the "permanent way" of a flying service "can be provided at the cost of about one three-hundredth part for the cost of a similar length of railway line."

As instancing the applicability of aircraft under present-day conditions, a case is mentioned where a firm owning a wolfram mine came to the conclusion that they could carry their output more cheaply by aeroplane than by train, by reason of the necessity of constructing a line forty miles long, laid so as to wind its way tortuously through valleys and mountain passes. He gives comparative statistics which would tend to prove that the flying machine is 50 per cent. faster than the rail, and 90 per cent. faster than steamship transport. In calculating costs, passengers are heartlessly itemised as "a special class of perishable goods, weighing, on an average, 14½ to the ton!" It may be noted that the compilers have not devoted their attention exclusively to the obvious advantage of speed, but have entered painstakingly into the many other factors, such as light upkeep charges, and the length of transit which may be expected in an ordinary working day; all of which show advantageously in comparison with existing transport methods.

The dormant possibilities of the flying-boat are brought out, and its capacity for load-carrying, not very generally recognised, is stressed. It is well to know such facts as those exampled, among which may be mentioned this: that "we have in our possession craft that could carry three tons weight from, say, Sydney to San Francisco in about two and a half days."

As for the sporting side of flying, it is proposed that flying clubs should be established, of which many men who have piloted machines in the war would be glad to avail themselves, placing the expenses on a co-operative basis. Races to Paris or Rome and back are discussed, to demonstrate the possibilities of the aeroplane for long-distance commercial flying. There is a sane and constructive chapter on measures to be taken by way of helping to bridge the gap that must inevitably ensue before manufacturers of aircraft can start production of commercial aeroplanes on a quantity basis. The theory is advanced that many folk will be inclined to make their initial flights, at least, in the lighter-than-air machine, the bulk of which would seem to afford protection; and it is thought that this type of craft may, with careful organisation, proper arrangement of harbours, and skilful navigation, make pleasure airships a commercial proposition.

One may deduce from this effective collaboration that the machine of a decade or so hence will be to the present-day aeroplane what the "Queen Elizabeth" is to the coracle of the woad-stained Britons, given the rapid development that cannot but ensue under the spur of economic competition. Hovering flight by means of the despised helicopter, is not ruled out, and one contributor hazards the opinion that machines carrying passengers in air-tight compartments may yet fly at an elevation of 40,000 feet, and with a speed of 200 miles an hour. It would be a bold man who would gainsay any of this, in the light of what has happened in the last 10 years; and certainly the book is an excellent corrective to wild prognostications, and a reference library in petto for the commercial seeker after knowledge who wishes for real instruction, and not scatter-brained imaginings.—R. H. B.

AERIAL SURVEYING.

A correspondent writes pointing out the possibilities of the use of the aeroplane in future surveying, particularly in connection with the piecemeal photograph of the terrain. The idea is not a new one, and an aerial survey was commenced in Italy, but the question is of sufficient importance once more to bring it to notice. At the present time there exists an enormous number of aeroplanes specially equipped with high-class photographic apparatus, for which there will be little further military use. Everyone is familiar with the photographic maps which have been in continual use for the last three years at least in connection with military operations on every front. The photographs of sections of a wide area are taken from a common altitude, which results in all of them appearing to scale, and when pieced together provide a vertical view of a section of a landscape, often representing many miles in area.

By making use of apparatus of this character, it should be possible to explore and survey the numerous tracts of uninhabited land in a few weeks more accurately than could be done from the ground in as many years.

When it becomes necessary to obtain contour pictures these could be secured by taking oblique photographs along parallel lines. The series taken along each line when pieced together would result in a panoramic view of the land in a given latitude or longitude, and the successive lines of panorama would show an impression of the whole area under survey in a series of waves.

Setting aside altogether geographical surveys of unexplored areas, the aeroplane camera should be a valuable aid in future surveys in England and in other European countries, as a check on the more conventional methods, because details overlooked by the terrestrial surveyor would clearly show up in the photograph and enable corrections to be made.

It would be interesting if a surveyor who has some knowledge of the limitations of aerial photography could express an opinion as to the actual degree of usefulness which the aerial camera might offer.

THE FREEDOM OF THE AIR.

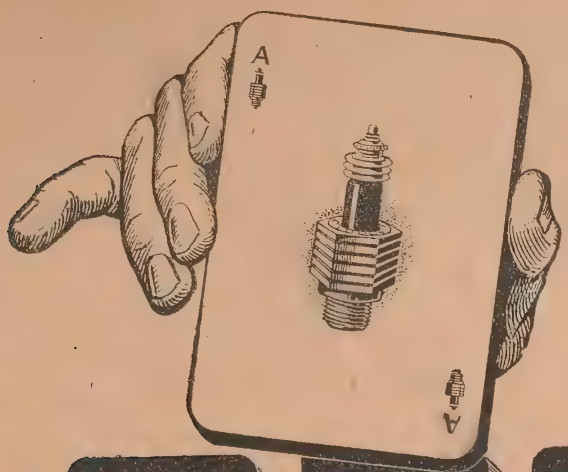
It is understood that there will be no passenger or commercial aircraft services between this and other countries for some time. The consent of the Air Ministry will have to be obtained before commercial aeronautics plans can be materialised, and at the present their consent will not be granted.

The reason for this ban is not a desire to repress or restrict private enterprise, but the whole point is that preparations are not complete for commercial ventures on a large scale. The first difficulty to be solved is a scheme for regulating and controlling air-lines.

For instance, at present there are no clearly defined laws of the air, and to bring the air into the commercial sphere without laws would create chaos. There would quickly be trouble with the Customs authorities of all nations. Fully sufficient legislation would have to be framed to prevent contraband merchandise being carried by aircraft from England to the Continent, and vice versâ.

A system of air-customs would have to be instituted, and that alone presents many difficulties. For instance, a pilot wishing to convey contraband could very easily escape detection by landing on an unauthorised spot, on the plea of engine failure, unless a careful check was devised.

At present the navigation of aircraft of every description in the United Kingdom, the coasts, and territorial waters adjoining, is prohibited by law, with the exception of Naval and Military aircraft or aeroplanes operating within three miles of a recognised aerodrome. That law, it is understood, is likely to stand for the present, but the Air Ministry is now engaged on a scheme of air legislation, which will be an attempt to solve the various problems of future commercial aeronautics.



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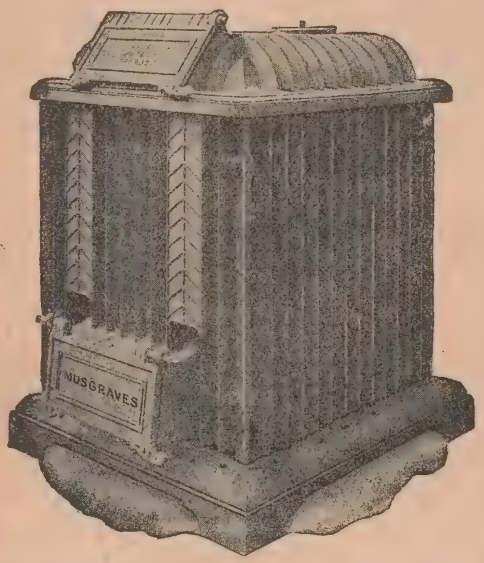
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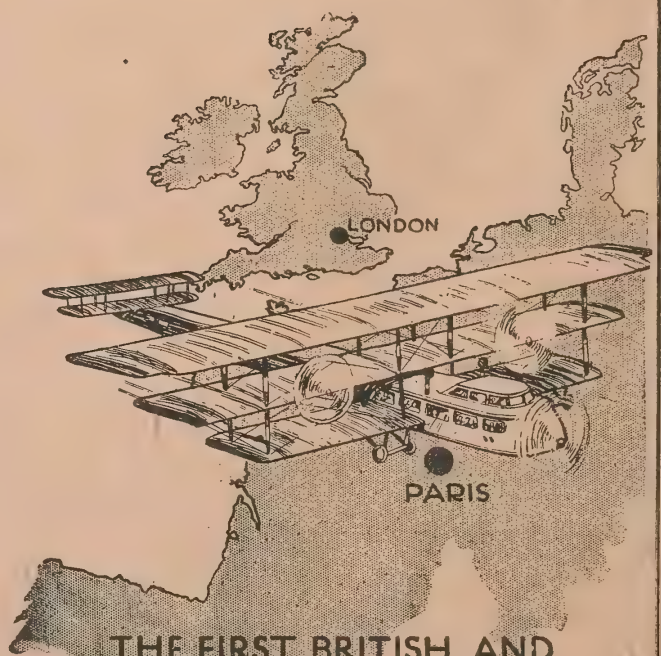
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THE AIRCRAFT TRADER

MARKET TOPICS.

PRICES ARE FOR QUANTITIES ON USUAL TERMS.

DEC. 7th, 1918.

GENERAL REVIEW.

The first stage of the Armistice crisis appears to be over. Manufacturers are not, of course, proceeding at any great pace with their Peace programme, but there is quiet confidence that in a few months the most serious stages of the transition period will have been overcome.

It is expected that Aircraft Factories, solely engaged on Aircraft work, will go slow for some time, although it is expected that the majority of Aircraft firms will be kept going on the post-Armistice requirements of the Royal Air Force for the next six months. No official information has yet been received, and some definite particulars are anxiously awaited.

Manufacturers of raw materials are now receiving orders from firms for their Peace programmes, and inquiries are also being freely received. The position is not at all satisfactory, seeing that the Ministry of Munitions is retaining in force the Priority Order of March 8th, 1917. This may be essential, but both makers and consumers are left in a state of serious uncertainty, seeing there is the possibility of the Ministry issuing at any time a Priority Order which must take precedence over orders in hand, and thus hold up the output of other works. It is not expected that consumers will commit themselves until the situation is cleared up, and, in consequence, buyers are going slow. In certain trades makers are covering themselves by accepting orders conditional on

(a) Any alteration in the present regulations by the Ministry.

(b) Question of prices being mutually arranged should control be entirely relaxed.

(c) Purchaser reserving right to cancel the order should it not be possible to agree.

In view of the Election and the approach of the first Peace Christmas since 1913, there does not appear to be any great desire to tackle large Peace programmes; but it is hoped that the Ministry will before the end of 1918 furnish more definite information of their Priority scheme, and also remove entirely any restrictions which are likely to hinder production.

COPPER.—Since the restrictions have been removed, inquiries have been received for home consumption; but, generally speaking, the market is quiet. In some quarters it is expected that the present price will remain in force well into next year. On the other hand, it is stated that some American producers have offered metal for 1919 delivery at about 23½ cents. The question of price is obscure, and nothing can be lost by waiting, as it is not expected that there will be an advance when the price comes up for review, although it is expected that producers will resist very strongly any attempt to reduce it.

CURRENT PRICES.

Standard	£122 10 0 per ton.
B.S.	£137 0 0 per ton.

TIN.—This market is very quiet indeed; the downward trend of price is causing buyers to hold their hands. Very little metal has been sold during the past 10 days, and stocks are increasing. It is expected that the Tin Executive will soon be dissolved, and the regulations controlling Tin considerably relaxed.

COMPARATIVE PRICES.

To-day (3rd)	£275 10 0 per ton.
Last month	£350 0 0 per ton.
August	£399 0 0 per ton.
Highest price, 1917	£309 0 0 per ton.
Highest price, 1916	£205 0 0 per ton.

LEAD.—The advance in price, announced in last week's issue, may result in buyers holding back, the general feeling being that the price will not be maintained. There does not appear to be a shortage of supplies at present, but a very large accumulation of orders are awaiting release, and the demand for original requirements will certainly be very large.

STEEL.—The mills are very quiet indeed, and very few orders are being received. The majority of the mills are still producing in order to keep their men employed. There will be ample supplies of steels available for the firms who continue building aircraft. The prices will, however, continue to be controlled by the Ministry of Munitions.

TIMBER.—This market is at present in a very quiet condition, and merchants and consumers are apparently awaiting the official announcement of the Timber Controller as to the extent of the control which will still be exercised by him. The meeting announced in the last issue has taken place, and the whole timber position was reviewed. It is understood that the Committees informed the Controller that the restrictions on home-grown Timber should be relaxed immediately, but that the present control of prices should, for the time being, remain in force. They were also of the opinion that, for the present, central purchasing should remain, but the system at present in vogue needed revising.

It is interesting to note that the Committees suggested that the issue of permits for the purchase of imported wood in the United Kingdom should cease. The Controller has promised to give the various matters his careful consideration, and has promised to relax the restrictions as soon as possible.

There will undoubtedly be very large demands for Timber, and it appears to be a question of shipping facilities for importing supplies. At the present time, shipping is being taxed to its utmost capacity, and the position is not likely to become easier for some months. There has not yet been an appreciable reduction in freight, and there should certainly be a re-adjustment of shipping freights, otherwise the market will be seriously affected. It is stated in certain quarters that the Government hold large stocks of American Hardwoods, and it will be interesting to note what action the Controller intends taking, seeing that the stocks have been purchased at a very low figure.

At the present time there are ample supplies of aeroplane Timbers available for the immediate needs of the Aircraft Industries. As far as prices are concerned, it is expected that they will be controlled by the Authorities, and although no immediate reduction is expected, it is quite possible there will be an adjustment when freights are reduced.

The same remarks apply to the prices of Plywood.

FABRIC.—The position at present remains unaltered, no information having been received from the Air Ministry as to the disposal of the huge stocks of aeroplane Timber held by them.

BOWDEN WIRE.

The Bowden Wire, Ltd., of London, has opened a works in New York to facilitate the ample supply of their products without interfering with the requirements at home, where these products have been used by nearly every War Department.

A CHANGE OF PROPRIETORSHIP.

The business of the Pulvo Engineering Co., Ltd., 10/16, Dane Street, High Holborn, W.C.1, has been acquired by the Whitfield Aviation, Ltd., which was recently formed for that purpose. The management of the new concern is in the capable hands of Mr. Harry Whitfield—under whose direction the Pulvo Co. achieved such success—who is the managing director of the company.

Whitfield Aviation, Ltd., are offering all the special features in their business which previously placed the Pulvo Co. on a good footing as manufacturers of component parts, and for that purpose a new and larger factory has been acquired—particulars of which will be published shortly. All rights in the trade-mark, "Pulvo," and in the goodwill attaching to the name have been taken over by the new company.

"ASCOL" CHARTS.

The Aircraft Supplies Co., Ltd., is issuing a further set of charts, which relate to the A.G.S. studs, eyebolts and strainers. They will, undoubtedly, be of great assistance to the whole Aircraft Industry, and especially the Cost Office, Raw Materials Dept., Stores, etc. These charts, which were prepared at the special request of the Air Ministry, can be obtained, free of cost and postage, upon written application to the Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, London, W.C.2.

This series is a continuation of the "Ascol" length and weight charts for bolts, for which there was a great demand, and the Aircraft Supplies will always be pleased to consider the preparation of similar sets, for firms' private use only, and will also endeavour to publish further sets as the information becomes available for publication.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Excess Profits Tax Must Go.

One of the most urgent problems of the moment is the incidence of the Excess Profit Duty. The sooner it is solved the better for the country at large.

Questioned on the subject, the Chancellor of the Exchequer expressed his personal conviction that it would be in the highest degree unwise to contemplate the continuance of the tax on anything like the existing basis. It was essential, he continued, to get back to the peace basis of expenditure as quickly as possible. Admittedly, the Governmental control of industry had resulted in considerable extravagance, and it will be a hard task to cut down departmental expenditure to harmonise with revenue.

An Impossible Burden.

But it must be done, and most people will insist that the change over from war to peace must be drastic, swift, and at the same time must be executed with efficiency. As things are now industry is burdened with a stupendous deadweight of Excess Profit Duty quite beyond its physical capacity. It is the less able to bear the strain because now that hostilities have ended it must accommodate itself to the new and, possibly, more severe test of self-preservation. Weighed down with the abnormal burden of this tax, the task would be impossible.

Equitable Division Essential.

No one in their senses expects a post-war level of taxation so light as that to which we were accustomed. But the heavier burden must not be thrown entirely on industry, else it will defeat its own object: it must be distributed justly and equitably, so as to enable industry to develop.

Some other means must be devised to raise the requisite revenue for the upkeep of the State, etc. In the meantime, domestic industry must be properly fertilised and export business developed to its utmost capacity in order to more than compensate for imports and to help reduce the big debt to certain countries arising directly out of the war.

Check to Industrial Plans.

Until this is done, or, at all events, until there are definite indications of the policy to be adopted by the State, there must necessarily be a restraint to industrial progress and development. If, instead of a nauseating quantity of electioneering clap-trap, our politicians would let the country know what plan of campaign they had in view, it would be very helpful, inasmuch as industrial interests would be able to complete these post-war programmes.

Cheerful Aircraft Shares.

Collectively the market in aircraft and kindred shares has been in quite a cheerful mood with values in the ascendant. Sunbeams, in particular, have been exceptionally strong, commanding a price of about 85s. to the accompaniment of rumours that something nice may be expected by shareholders as a final plum out of the exceptional war prosperity.

Post-War Prospects.

Incidentally, it is confidentally maintained that post-war business prospects are distinctly promising, for not only has a thoroughly sound financial position been built up, but the material position has also been considerably enlarged and strengthened, thus opening up great possibilities.

Rolls-Royce and Leylands.

Rolls-Royce shares, too, have attracted a lot of buyers, with the result that the price ran over £2, the "letters" in respect of the new shares offered to shareholders at 20s., commanding 14s. or more premium. Here, again, the material position has been considerably enlarged and strengthened, auguring well for post-war business, which is said to be already very large.

Leyland Motors shareholders are in for a good thing, as the directors are to provide a bonus of one new share in respect of every two shares held. This will come out of reserves and accumulated profits. The present shares have been selling over 85s., so that the bonus is very substantial. Napiers have been in quiet demand on dividend prospects, which also explains the active buying at advancing prices of Darracqs.

Healthier Bankruptcy Statistics.

Last year's bankruptcy statistics denote, interpreted literally, a healthy state of industrial and commercial prospects. The number of Receiving Orders was 1,089, against 1,557 in 1916, and the Deeds of Arrangement figured at 612, against 1,050.

The liabilities amounted to £2,959,700, compared with £4,197,000, and the estimated loss to creditors £2,232,000, against £3,411,000. These figures contrast remarkably with those of a few years ago, and suggest a sounder commercial position.

Chauviere's Propeller Proposals.

Shareholders of that French concern, the Chauvière Integral Propeller Co., recently assembled at an extraordinary general meeting for the following purposes:—The modification of the name and scope of the business, the authorisation of a debenture loan, and an increase of the capital.

Some Dividend Announcements.

Brown Bros. announce an interim dividend of 2½ per cent., free of tax, the same as a year ago. For the whole of 1917 the dividend was 10 per cent., as in the case of 1916, but for the preceding six years there was a regular 7½ per cent. Petters declare an interim dividend of 5 per cent., the same as a year ago.

Striking Italian Progress.

Some instructive statistics have been published in an Italian contemporary bearing upon the growth of the motor industry during the war. This growth reflects the development of the Aircraft Industry, seeing that the two branches have become almost inseparable by force of circumstances.

At the end of 1913 the number of Italian limited liability companies engaged in the industry was 32, representing a capitalisation of 49,167,000 lire. The number of companies increased to 55 by the end of 1917 and the capitalisation to 195,076,000 lire.

At the earlier date the reserves equalled only 6 per cent. of the specified capital, but the percentage rose to 213 by the end of 1917. Simultaneously, the average dividend increased to from 3⅓ per cent. to 8 per cent. Motor-car imports in 1913 were 13,531,372 lire, and only 7,729,909 lire in 1917, while exports expanded from 34,180,937 lire to 115,693,805 lire.

Associated Aircrafts, Ltd.

At the Guildhall, Robert Taylor, a director of Associated Aircrafts, Ltd., living at St. Mary's Road, Paddington, and having an office at New Bond Street, appeared to an adjourned summons charging him with having committed perjury in an affidavit sworn in the High Court, and with having converted to his own uses £5,000 entrusted to him for the purpose of paying Treasury dues in connection with a proposed increase of capital from £25,000 to £1,000,000 by the said company.

The case arose out of a transaction between the defendant and Panajotis Demetrius Baronnos, a Greek shipping agent, carrying on business in Antwerp, who came to this country on the occupation of Belgium by the Germans. Mr. Baronnos was introduced to defendant, who informed him of a resolution passed by Associated Aircrafts to increase their capital, subject to obtaining Treasury sanction. For the purpose of paying stamp and other dues, defendant required a loan of £5,000, which on certain conditions Mr. Baronnos agreed to advance. Not receiving his money when defendant's bills became due, Mr. Baronnos took action in the High Court, when, it was alleged, defendant committed the perjury complained of. In connection with the second charge it was alleged the money advanced by complainant for paying fees for the increased capital was not used for that matter at all.

Mr. Baronnos, in the box, was cross-examined at some length by Sir Richard Muir, counsel for the defence. He said defendant's debt had been purchased, and in consequence he did not now owe him one penny.

Sir Alfred Bower, who has heard the case throughout, said the perjury charge would be dismissed, but in respect of the second, he thought it must go to a jury.

Sir Richard: My contention is that as the first charge was founded on a misunderstanding of facts the second is on a misconception of law. This £5,000 was a loan to Mr. Taylor, pure and simple. Because the resolution to increase the capital of the company was rescinded it did not necessarily follow it was abandoned. Defendant acted on advice.

Mr. Taylor went into the box and said not one penny of this money was used for his own purposes—or for any other than that of the company in question.

Mr. Cecil Whiteley, prosecuting, did not cross-examine, and the alderman said this materially affected the case, and the summons would be dismissed.

HUMBER DIVIDEND POLICY.

The Chairman of Humber, Ltd., in moving the adoption of the report, said he observed that reports in the financial columns of the Press appeared to have anticipated that for the past year the company should have paid at least 10 per cent. to the ordinary shareholders. His answer to this was that they could have done so had they been regardless of the future welfare of the company. He was sure the shareholders would agree with the board in thinking that the permanent prosperity of the company was of more importance than an increase of the dividend for the year. Those who were ordinary shareholders had had to go dividendless for 10 years, and the directors wanted to see to it, as far as human foresight could do so, that, for the next 10 years—let them hope for the rest of the existence of the company—they would not again experience a year without a distribution to all shareholders. To this end it was essential that they should be placed in a strong financial position.

As to the company's prospects, he said that to date the output of the works, mainly consisting of munitions of war, had exceeded that of any previous corresponding period. They were as quickly as possible reorganising the works to enable them to provide for the piping times of peace. They had every reason to hope for a larger trade than they had hitherto known.

There was on the horizon but one black spot, which, let them hope, would quickly disperse like a morning mist in face of the rising sun—he referred to the threatened trouble with labour. As regarded their own employees, the best of relations existed on both sides. If they stood alone, he did not think they need anticipate any trouble, but, unfortunately, they did not stand alone. Looking at the question in its broad aspect, matters affecting the trade as a whole must be guided by the Employers' Federation and the men must be guided by their union. They could only hope that a spirit of reasonableness would prevail on both sides, and that no labour trouble would arise.

AN INTOLERABLE NUISANCE.

In the Chancery Division on Friday, Dec. 6th, Mr. Justice P. O. Lawrence had before him the case of Williams v. Renault, Ltd., on a motion for an injunction to restrain an alleged nuisance arising from the testing of aeroplane engines on open ground in West Brompton at the back of the plaintiff's premises.

Mr. Ward Coldridge, K.C., for the plaintiff, who is 65 years of age, said that his health had been completely shattered by the intolerable din of the engines, and he was now suffering from a bad nervous breakdown. He had put up with it during the war.

Mr. Jenkins, K.C., for the defendants, said they desired to stop any cause for complaint, but they were under the control of the Government, and were powerless in the matter. They had gone to the Air Ministry, who told them that the war was not yet over, and they must go on with the work as usual.

Mr. Coldridge: We have got an armistice. There are other places where you can test your engines. Our surveyors will find you one where you will not be a nuisance to anybody.

His lordship said it was quite impossible to shut down the work which was of national importance at once, but counsel might find out if it would not be possible to remove the testing outside London.

Mr. Jenkins said they had reduced the hours of working and the number of engines tested by some 50 per cent., and he was instructed to offer to confine the work to three days a week.

Mr. Ward Coldridge accepted this offer and the motion stood over for a fortnight to see if any further arrangements to remedy the nuisance could be made.

ITALIAN FINANCE.

In the report of the director of the I.A.M. Company, of Naples, the shareholders are told that the firm is awaiting the Government's verdict on the performance of a 700 h.p. seaplane, which is undergoing the final military acceptance tests. Of the half a million lire of profits on the financial year ending June 30th, 1918, 10 per cent. goes to shareholders, the rest to the various reserve and sinking funds.

In connection with the immense increase of capital mentioned in these notes recently, and still an ever-fresh feature of the trade here, it has been stated in print that delay in State payments is one cause thereof. Also that one of the biggest affairs has not secured the entire approval of its smaller shareholders in a recent issue.

The Vallecoccia Company, with 30,000 lire of capital for the pushing of a self-sealing device applicable to tanks which have been holed by bullets, is registered.—T. S. HARVEY.

COL. GRANT MORDEN'S REPLY.

Colonel Grant Morden, Coalition candidate, at Chiswick, on Dec. 9th, denied that he had made any profit out of the Acetate Cellulose Company. On the contrary, he said, he lost £25,000, and had lent the company over £100,000. He was prepared to give to any charity any profit it could be established he had made. Mr. Lloyd George and Mr. Bonar Law would not have given him official recognition if they had not been satisfied as to his integrity.

TIMBER CONTROL (AMENDMENT) ORDER 1918

Pursuant to the above Order, notice is hereby given that from the date hereof the amount of imported softwood which may be purchased without a permit in accordance with paragraph 15 (a) of the Timber Control Order, 1918, shall be an amount not exceeding a total value of £100 in any one calendar month, and form "A" in the schedule to the Timber Control Order, 1918, shall be varied accordingly, as follows:—

"I hereby certify that the purchase of imported softwood entered against my name is correctly described, and that it, together with any other purchases of imported softwood during the current calendar month (whether made directly or through third parties or from whatever source) without permit from the Controller of Timber Supplies does not exceed £100 in total value, and that this purchase is for work of National Importance or urgent necessity."

Dated this 5th day of December, 1918.—J. B. BALL, Controller of Timber Supplies.

A TRADE MOVE.

Sir W. G. Armstrong, Whitworth & Co., Ltd., of Openshaw, Manchester, have now appointed the following district representatives throughout the country, and have opened permanent district offices in connection with their tool steel and small tools business:—

LONDON AND SOUTHERN DISTRICT.—Representative: Mr. Ernest Wilson, 8, Great George Street, Westminster, S.W.1. Telegrams: "Zigzag, Parl, London." Telephone: 4010 Central.

SCOTLAND AND IRELAND.—Representative: Mr A. S. Jones, 137a, St. Vincent Street, Glasgow. Telegrams: "Tulesteel, Glasgow." Telephone: 2214 Central.

MIDLAND DISTRICT.—Representative: Mr. Walter Todd, 158-161, Great Charles Street, Birmingham. Telegrams: "Waltod, Birmingham." Telephone: 417 Central.

NORTH-EASTERN DISTRICT.—Representative: Mr. J. D. Smith, Pilgrim House, Pilgrim Street, Newcastle-on-Tyne. Telegrams: "Crucible, Newcastle-on-Tyne." Telephone: 241 Central.

LANCASHIRE AND WALES.—Representative: Mr. T. W. Etchells, 5, John Dalton Street, Manchester. Telegrams: "Hispeed." Telephone: 899 Central.

MORTGAGES, CHARGES AND SATISFACTIONS.

ASHFORD AIRCRAFT WORKS, LTD.

Mortgage dated Nov. 15th, 1918, charged on premises at Ashford, Middlesex, securing £15,000. Holders: Great Eastern Timber Co., Ltd., London, E.C.

ENGINEERING PROPRIETARY, LTD.

Satisfaction in full on Dec. 2nd, 1918, of debt dated Sept. 28th, 1918, securing £1,750.

NEW COMPANIES.

H. WILLIAMS (CHICHESTER), LTD.—Registered Dec. 2nd. Capital £600 in £1 shares. To take over the business of manufacturers of seaplane floats and aircraft components carried on at Chichester by H. A. Williams. The subscribers (each with one share) are:—H. A. Williams, Marsden, Chichester, launch builder; Capt. A. E. Williams, Marsden, Chichester; F. Chapman, 135, High Street, Smethwick, solicitor. The first directors are:—H. A. Williams and Capt. A. E. Williams. Registered office:—North Gate, Leicester.

WING CLUB, LTD.—Registered Dec. 2nd. Capital £1,000 in £1 shares. To establish and maintain a club for those interested in aviation. The subscribers (each with one share) are:—R. Kennedy, 52, London Wall, E.C., solicitor's managing clerk; F. Stanley, 90, Burrows Road, N.W.10, solicitor's clerk; E. J. Royfee, 141, Hertford Road, Kingsland, N.; Cpl. P. Sanders (N.Z.E.F.), 42, Defoe Avenue, Kew Gardens, S.W., company director; C. S. R. Tozer, 28, Mansell Road, W.3, solicitor's clerk; C. W. Partington, 4, St. Alban's Crescent, Woodford Green, Essex, solicitor's clerk; G. W. Kennedy, 83, Addison Gardens, W14, cashier. The first directors are:—J. A. Whitehead (governing director of Whitehead Aircraft, 1918, Ltd.), and others, to be appointed by the subscribers. Registered office:—Castle Buildings, Whittaker Avenue, Richmond, Surrey.

GEO. SLADE AND CO., LTD.—Private company. Registered Dec. 4th. Capital £10,000 in £1 shares. To acquire the leases of Geo. Slade and Co., and Nestler and Co., Ltd., constructional engineers, woodworkers, aircraft constructors, etc. The subscribers (each with one share) are:—H. F. Webb, 10, Brewster Road, Leyton, contractor and general engineer; G. T. Slade, 8, Brewster Road, Leyton. First directors:—H. F. Webb and G. T. Slade. Registered office:—3, Barnsbury Park, N.

BRITISH AEROPLANE TIMBER CO., LTD.—Private company. Registered Dec. 5th. Capital £1,000 in £1 shares. As title. The subscribers (each with one share) are:—W. Semken, 12, Hillfield Park, N.10, solicitor; W. Dew, 41, Malvern Road, N.8, solicitor's clerk. Governing director:—R. F. Wells. Registered office:—20, Kempsford Road, S.E.11.

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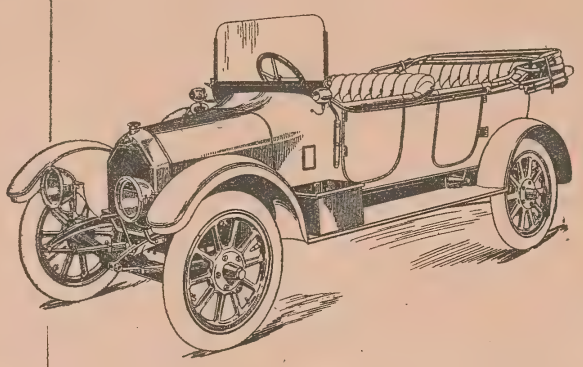
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CONTRACTORS TO THE ROYAL AIR FORCE.

(Continued from page 2178.)

most valuable information and photographs under very difficult conditions, displaying marked ability.

Lt. HORACE ROBERT HERN. (France.)

Sec. Lt. ALFRED ALEXANDER TUTTE. (France.)

On the night of Sept. 20th-21st, Lt. Hern, whilst gliding down to bomb a town, was wounded in the shoulder; he, nevertheless, dropped his bombs with good effect. On the return journey, facing a very strong wind, he became exhausted and well-nigh fainted. Seeing his condition, Sec. Lt. Tutte, his observer, with great presence of mind and cool courage, climbed on to the cowling and held the joy-stick, and the machine was safely landed. An exhibition of brave determination and devotion to duty on the part of these officers, and deserving of high praise.

AWARDED A BAR TO THE DISTINGUISHED FLYING MEDAL.

57162 Serjt.-Obsr. ARTHUR NEWLAND, D.F.M. (Enfield Wash) (France.)

This non-commissioned officer sets a splendid example of courage, skill and determination to the other non-commissioned officers of his squadron During the month of August he crashed six enemy machines. (D.F.M. gazetted Sept. 21st, 1918.)

AWARDED THE DISTINGUISHED FLYING MEDAL.

F/70544 Serjt.-Obsr. GILBERT BARLOW (Failsworth, Manchester). (Sea Patrol, Flanders.)

This non-commissioned officer has taken part in 50 raids, and is a gallant and skilful observer. On Sept. 28th he was engaged in four raids, encountering a large formation of enemy aeroplanes on the last. In the combat he was wounded in both legs, but, notwithstanding this, he and his pilot accounted for two of the enemy

52874 Serjt.-Mech. JAMES HENRY BOWLER (Notting Hill) (France.)

A most accurate and skilful observer who has displayed great courage in many engagements, notably on Sept. 5th, when his formation was attacked by a large number of Fokker biplanes Wounded early in the engagement, he continued to serve his gun with coolness and courage, killing the pilot of one of the attacking 'planes. On his return he gave a clear and valuable reconnaissance report before being evacuated to hospital.

207112 Serjt.-Mech LEONARD AUGUSTUS CORNES (Folkestone). (Sea Patrol, Mediterranean.)

As gun-layer and observer this non-commissioned officer has displayed marked gallantry and skill deserving of high praise. His conduct on July 24th, when observer to Lt. Keymer, was particularly noteworthy. Engaged against a greatly superior force, his gun jammed; keeping cool and collected during a 2,000 ft. spin, he cleared the jamb and brought his gun into action again.

202839 Serjt. Mech. (Pilot) LESLIE ALEXANDER DELL (Hanwell, S.W.). (Sea Patrol, Flanders.)

This non-commissioned officer has taken part in over 30 raids. He is an exceptionally keen observer and a very good navigator. During recent operations he has been conspicuous for his skill in dropping bombs, causing heavy loss to the enemy.

200425 Serjt.-Mech. JAMES GRANT (Sandbank, Argyllshire). (France.)

A gallant and capable non-commissioned officer who has accounted for six enemy aeroplanes. On Sept. 1st, whilst on a bomb raid, his formation was attacked by 15 Fokker biplanes and five triplanes. In the severe fighting that ensued Serjt. Grant served his gun with exceptional skill, crashing one enemy machine, and it was largely due to his good shooting that the enemy were eventually driven off.

202612 3rd Air Mech. (W.) FREDERICK GEORGE HAYWARD (Corfe Mullen, Dorset.) (Sea Patrol, Irish Sea.)

A most reliable and skilful wireless operator who has done excellent work as an observer on seaplane patrols. His consistent good work deserves high praise.

S/35453 Serjt.-Mech. MEYRICK JONES (Cricklewood, N.W.). (France.)

On Sept. 16th this non-commissioned officer displayed exceptional courage and devotion to duty. In an engagement with a Fokker formation he was wounded in the arm; not realising this, the pilot directed Serjt. Jones to climb on to the right wing to steady the machine, which was almost out of control, owing to the aileron controls being shot away, and was side-slipping down over enemy territory. This he did, and the pilot regained control of the machine, and landed safely at the aerodrome. By this time Serjt. Jones was almost fainting from loss of blood.

232650 2nd Air Mech. (W.T.) BERNARD EDWARD GUY TAPLIN (Southampton). (Sea Patrol, Mediterranean.)

This airman has rendered consistent good service as observer on anti-submarine patrols, having completed 200 hours in the air since April 1st, during which period he has bombed three hostile submarines.

AWARDS OF FOREIGN DECORATIONS.

His Majesty the King has granted unrestricted permission for the wearing of the undermentioned decorations, conferred on the officers indicated in recognition of valuable services in connection with the war :—

CONFERRED BY THE PRESIDENT OF THE FRENCH REPUBLIC.

THE CROIX DE GUERRE, AVEC PALME.

Maj. (actg. Lt.-Col.) Arthur Clinton Maund, D.S.O., 8th Can. Inf. and R.A.F.

Lt. (actg. Capt.) Stanley Gordon Smith.

Lt. (actg. Capt.) Arthur Hyde Flower.

CONFERRED BY THE KING OF ITALY.

CROCE DI GUERRA.

Lt. (Hon. Capt.) George Francis Meager.

CONFERRED BY THE KING OF THE BELGIANS.

Maj. (actg. Lt.-Col.) Alwyn Vesey Holt, D.S.O. (Officier de l'Ordre de la Couronne).

Maj. the Hon. Edward Alexander Stonor (Chevalier de l'Ordre de Leopold).

Capt. Francis Gordon Hogarth (Chevalier de l'Ordre de la Couronne).

CONFERRED BY THE KING OF THE HELLENES.

(For Services at Thasos.)

THE CROSS OF MILITARY MERIT.

Surg. Louis Bruce Stringer, R.N., attd. R.A.F., Limenaria Hospital, Thasos.

Mrs. Lilian O'Meard Doughty-Wylie, M.B.E., Matron of Limenaria Hospital, Thasos.

AWARDED THE AIR FORCE MEDAL.

Capt. (actg. Maj.) Archibald Stuart Charles MacLaren, M.C (Egypt.)

Lt. Kenneth Misson Pennington. (Mesopotamia.)

AWARDED THE AIR FORCE CROSS.

213223 Serjt.-Mech. Raymond George Goldfinch (Fielding, New Zealand).

224802 1st Air Mech. John Alfred Francis (Stapleford, Notts.).

AWARDED THE MERITORIOUS SERVICE MEDAL.

59991 Pte., 1st Cl., Stanley Addison Seaman (Gislingham, Suffolk). (France.)

281161 Pte., 2nd Cl., Charles Arthur Reeder (Huddersfield). (France.)

21707 1st Air Mech. Leonard Betteridge (Monmouth). (France.)

73-13 Actg. Cpl. G Clifford (Canada). (Canada.)

AIR MINISTRY, Dec. 3rd.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officers, 3rd Cl.—Capt. W. E. G. Bryant, Oct. 9th; Lt. (actg. Capt.) H. F. Walker, and to retain the actg. rank of Capt. while so empld., Nov. 1st; Capt. A. E. Hartley, Nov. 11th.

Staff Officer, 4th Cl.—Lt. W. G. Knight, Oct. 14th.

The following temp. appts. are made :—Brig.-Gen. (P.) —Lt.-Col. (actg. Brig.-Gen.) B. C. Fellows, and to retain the actg. rank of Brig.-Gen. while so empld., Nov. 25th.

Staff Officer, 3rd Cl.—(Q.).—Sec. Lt. H. W. Brooks, and to be actg. Capt. while so empld., Oct. 12th.

FLYING BRANCH.—Capts. to be graded for pay as Capts. while empld. as Capts. (K.B.) :—E. G. Cleverly, Sept. 24th; C. W. Spencer, Nov. 18th.

Lt. (actg. Capt.) I. H. P McEwen retains the actg. rank of Capt. while empld. as Capt. (A.), from (S.O.), Oct. 26th

Lts. to be actg. Capts. while empld. as Capts. (A.) :—K. B Forster, Oct. 27th; C. McEwen, M.C., D.F.C., Oct. 28th; L. de S. Duke, Nov. 3rd.

Lts. to be actg. Capts. while empld. as Capts. (K.B.) :—L. Balfour, S. H. Gudgin, R. G. W. Martin, Nov. 18th.

Sec. Lt. O. Gibb to be actg Capt. while empld. as Capt. (O), Oct. 29th.

Capt. C. H. B. Readman reverts to Lt (A.), at his own request, Nov. 29th.

Sec. Lt. (actg. Lt.) G. K. Cathles retains the actg. rank of Lt. while empld. as Lt. (O.), from (T.), Aug. 7th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—11073 H. E. Peto, Aug. 17th; O. J. Demers, Sept. 19th; 678162 S. T. Metcalfe, Oct. 9th; 240232 W. McL. Hirons, Oct. 10th; 115127 L. G. C. Perryer, 110208 G. P. Macdonald, Oct. 12th; 40250 D. C. Hurworth, 2491 H. F. Rouse, Oct 14th; 13591 C. S. Wolton, 201354 W. J. Tucker, 240095 J. Paterson, D.C.M., 179121 E. J. Addison, 179126 L. W. J. Lawson, Oct. 16th; 150541 F Johnson, Nov. 6th; 137100 M. Rock, Nov. 10th; 100429 F. G. Moore, 401459 M. E. Smith, 552473 C. H. A. Godfrey, 158157 E. M. Hook, 132381 C. E. Faulkner, 104909 H. M Turner, 177429 G. W. Brown, Nov. 13th; 31211 E. Groves, 115790 W. B Crealock, Nov. 14th; 74439 F. G. New, 128274 C. H. Baker, 53027 V. A. Cresner, 29038 C. Burnett, 37712 W Anderson, 154816 H. W. Spencer, 020927 E. A. Kemp, 153800 W. C. Jakes, Nov. 15th, 42291 L. W. Gare, 117240 J. G. Wynne-Williams, 424 F. C. Phillips, 9782 S. C. Taylor, Nov 16th; 10/89749 B. H. C. Russell, 8/1611 F. T. Edwards, 100272 E Robinson, 153201 A. D. McLean, 245440 E. H. Cooper, 45140 H. G. Haydon, Nov. 17th; 154167 R. H. Palmer, 154797 N. S. Morrison, 175927 R. F. Hammond, 54993 A. E. Cohen, 110059 W. O. A. Young, 95615 L. H Starkey, Nov. 18th; 96514 T. V. Thresh, Nov. 19th.

The following Cadets are granted temp. commns. as Sec. Lts. (A.) :—A. O. Adams, J. W. Aikenhead, W. M. Atkin, J. E. Beolchi, D. J. Brebber, R. E. Brown, W. N. Cunningham, De W. C. Derby, H. C. W. Dobbin, N. Duncan, W. S. Durkin, J. W Eastman, W. J Eastman, W. Ehmke, E. H. Elliott, C. R. Gard, F L. Graisley, G. H. Hill, J. B. Hoag, jun., W. W. Hough, E. H. Jones, C. R Knowles, J. A. Lane, M. La F. Lawrence, G. E. Lloyd, A. R. Mark, W K. Lees, Oct. 17th.

Sec. Lt. J. G. M. Mathewson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (A. and S.), June 2nd (substituted for notification concerning G. Mathewson in "Gazette," July 23rd).

The following Flt. Cadets are granted temp. commns as Sec. Lts (A. and S.) :—128225 J. F. Strugnell, Aug. 3rd; S. J. Chiddenton, Sept. 28th; 175477 M. McDonough, 175479 A. E. Mercer, 175480 E. H. J. Miller, 175483 I. E. Rawnsley, 175487 E. W. Reeves, 175486 W. G. Rich, 175484 R. L. Ronaldson, 175482 J. E. Royds, 175485 H. L. White, 175475 N. R. Lightbody, Oct. 25th; 117187 O. T. Hazell, Nov. 15th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—110895 A. H. Taylor, Oct. 1st; 84/070754 W. F. Lane, Oct. 9th; 10640 J. E. Truss, Oct. 12th.

50943 Flt. Cadet F. Eppinger is granted a temp. commn. as Sec. Lt. (S.), Oct. 19th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt. :—A. Baillie, S. V Langton, A. E. Muncaster (contracted on active service), Dec. 4th.

Lt. F. Whitehead (Lt., D. of Lan. Yeo., T.F.) relinquishes his commn. on account of ill-health, Dec. 4th.

Sec. Lt. J. A. Griffin relinquishes his commn., being physically unsuited for the duties of Pilot or Obsr., Dec. 4th.

The date of appt. of Sec. Lt. J. W. Frechette is April 3rd, and not as in "Gazette," May 31st.

The date of appt. of Sec Lt. R. H. Regan is July 3rd, and not as in "Gazette," Sept. 20th.

The date of appt. of Sec. Lt. G. Goad is July 19th, and not as in "Gazette," Sept. 24th.

The Christian names of 184944 Flt. Cadet Gideon Johannes Malherbe are as now described, and not as in "Gazette," Nov. 26th.

The Christian names of 184968 Flt. Cadet Daniel Johannes Roos are as now described, and not as in "Gazette," Nov. 26th

The names of 184952 Flt. Cadet Edward Wilfrid Tyler Meeser are as now described, and not as in "Gazette," Nov. 26th

The Christian names of 184929 Francois Nicolaas Joubert are as now described, and not as in "Gazette," Nov. 26th

The notification in "Gazette," Aug. 27th, concerning Sec Lt W. E. Hunt is cancelled.

The notifications in "Gazette," Oct. 1st and Oct. 18th, concerning Flt. Cadet Arthur Henry Taylor are cancelled.

ADMINISTRATIVE BRANCH.—Maj. N. C. Sampson to be Maj., from (A.), Nov. 27th.

Capt. E. B. Broughton to be Capt., from (K.B.), Nov 18th

Capt. H. H. Clarke (R. Welsh Fus.) is granted a temp commn. as Capt., May 11th, seny. April 1st.

Capt. J. B. Cussen to be Lt., from (A.), Oct. 15th.

Lts. (A.) to be Lts :—Hon. M. Greville, Nov. 2nd; W. H. McGee, Nov. 7th.

Lts. (K.B.) to be Lts.:—W. A. J. Gribble, Nov. 12th; J. L. Carvel, Nov. 19th.

Lts. (O.) to be Lts.:—K. L. Bulkley, Sept. 19th; W. Nuttall, Nov. 1st.

Lt. A. A. M. Weir to be Lt., from (T.), Sept. 23rd.

The following are granted temp. commns. as Lts., seny. April 1st:—H. B. Shepheard (Lt., N. Lanc. R.), May 22nd; E. H. A. Lockwood (temp. Lt., Worc. R.), Sept. 19th; G. H. Martin (Lt., Norf. R.), Oct. 28th; C. L. Hancock (Lt., Leic. R.), Oct. 29th; H. B. Stutfield (temp. Lt., Gen. List), Nov. 23rd; P. L. Bolton, M.C. (temp. Lt., N. Lanc. R.), is granted a temp. commn. as Lt., Oct 9th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts.:—G. F. Peirson, Sept. 22nd; E. Bell, Oct. 4th; H. Bradshaw, Oct. 12th; C. B. Charlewood, R. L. Raymond, Oct. 21st; E. S. de Pass, Oct. 22nd; W. Smith, Nov. 6th; J. H. E. Weekes, Nov. 11th; (Hon. Lt.) A. C. S. Buist, M.C., from (A.), Nov. 22nd.

G. M. M. Clune (temp. Sec. Lt., Lab. Corps) is granted a temp. commn. as Sec. Lt., Oct. 19th, seny. April 1st, and to be actg. Lt. while empld. as Lt.

The following are granted temp. commns. as Sec. Lts., and to be actg. Lts. while specially empld.:—R. Parker, Aug. 12th; L. N. Sargeant, Nov. 4th; J. McCarthy, Nov. 27th.

The following are granted temp. commns. as Sec. Lts.:—S. Thomas, Oct. 17th; W. D. Owen, Nov. 21st.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted hon. rank of Sec. Lt.:—W. N. Clements, April 24th; N. A. Dickinson, J. L. King, E. H. Newson, W. H. Ottewell, S. B. Standen, Dec. 4th.

Date of appt. of Sec. Lt. W. S. Leeming is Sept. 1st, and not as in "Gazette," Nov. 5th.

Notification in "Gazette," Sept. 20th, concerning Maj. A. N. Stuart is cancelled.

Notification in "Gazette," Oct. 25th, concerning Lt. (actg. Capt.) F. C. Staines is cancelled.

Technical Branch.—W. R. Baldwin-Wiseman (Capt., T.F. Res.) is granted a temp. commn. as Capt., Aug. 19th, seny. April 1st.

Lt. F. A. N. Haultain to be actg. Capt. (Grade A) while empld. as Capt., from (O.), Nov. 3rd.

R. B. Stephenson (Sec. Lt., R.E.) is granted a temp. commn. as Sec. Lt., Sept. 19th, seny. April 1st, and to be actg. Capt. while empld. as Capt.

E. C. Harris (Lt., R.E.) is granted a temp. commn. as Lt., Oct. 16th, seny. April 1st.

Lts. (A.) to be Lts. (Grade A):—W. L. P. Gould, Oct. 10th; C. B. M. Dale, C. L. Whitburn, Oct. 22nd; F. M. Miller, Nov. 20th.

Lts. (O.) to be Lts. (Grade A):—L. G. Martin, Aug. 30th; R. M. Pegg, Oct. 1st (substituted for notification in "Gazette," Nov. 19th); R. Rutherford, Nov. 5th.

W. R. Bernard (late Comdr., R.N., ret.) is granted temp. commn. as Lt. (Grade A), Sept. 9th, and to be hon. Maj. (substituted for notification in "Gazette," Sept. 13th).

Sec. Lt. (Hon. Lt.) G. W. Howland to be Sec. Lt. (Hon. Lt.), from (A. and S.), May 12th.

H. A. Newman (Lt., R.E.) is granted a temp. commn. as Sec. Lt. Oct. 14th, seny. April 1st, and to be Hon. Lt.

The following are granted temp. commns. as Sec. Lts. (Grade A):—D. Dougall, G. Forster, J. France, M. W. Tomlinson, N. B. D. W. Wood, C. E. Bugg, A. W. Edwards, P. J. Moyes, A. Newbury, A. J. Salmond, T. J. Williams, E. Lancaster, C. H. Kendall, J. Faux, Nov. 21st.

Sec. Lts. (Ad.) to be Sec. Lts. (Grade B):—F. Bunting, H. W. Levy, C. R. Cunningham, A. Gall, W. Wood, C. A. Broadhurst, E. J. Cook, V. A. F. Whitehead, Nov. 21st.

The following are granted temp. commns. as Sec. Lts. (Grade B):—N. Dainty, G. G. Creusen, J. N. Duthoit, H. A. J. Edgley, W. S. Harman, S. E. Hodgson, G. W. Martin, W. Pickard, T. H. Price, H. G. Williams, L. Palgrave, S. W. Rolfe, A. S. Davies, W. A. Frame, T. E. Lomas, A. C. Middlemass, H. Wilkes, W. A. Kyte, O. Loynes, H. J. Keay, N. B. Brown, G. McC. Cherry, J. P. Clews, H. L. Cooper, H. Cue, R. G. Hogg, L. Hawes, H. H. Hawkins, H. Philp, E. Long, F. A. Ashby, J. Stevenson, J. Stewart, F. Robins, C. Jackson, Nov. 21st.

Maj. C. K. Butler-Stoncy relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., Dec. 4th.

The date and appt. of Capt. C. Barrington is July 29th, and not as in "Gazette," Nov. 15th.

The notification in "Gazette," April 30th, concerning actg. Capt. D. R. Pye is cancelled.

The notification in "Gazette," May 21st, concerning Lt. J. H. Jennings is cancelled.

Medical Branch.—H. B. Porteous (late Capt., R.A.M.C., T.F.) is granted a temp. commn. as Capt., and to be actg. Maj. while specially empld., Oct. 21st.

The following are granted temp. commns. as Lts.:—V. I. Levy, Nov. 1st; C. C. Rowland, Nov. 26th; P. McDiarmid, Nov. 30th; A. Watson, H. J. Swan, Dec. 2nd (substituted for notification in "Gazette," Nov 22nd).

Dental Branch.—Lt. F. B. Stradling to be Lt., from (T.), Oct 30th.

Chaplains Branch.—The following are granted temp. commns. as Chaplains with the relative rank of Capts.:—Rev. J. H. Bentley, Rev. N. L. Bicknell, Rev. J. D. Bolton (late temp. Chapln. to the Forces, 4th Cl., A.C.D.), Rev. W. G. Carpenter, Rev. C. B. How, Rev. P. G. Levy (late temp. Chapln. to the Forces, 4th Cl., A.C.D.), Rev. J. H. P. Still (late temp. Chapln. to the Forces, 4th Cl., A.C.D.), Nov. 29th.

Rev. G. A. Davies (late temp. Chapln. to the Forces, 4th Cl., A.C.D.), Nov. 30th.

Memoranda.—W. W. Hardwick (Eng. Capt., R.N., ret.) is granted the hon. rank of Lt.-Col., Dec. 3rd.

Capt. F. B. Binney to be hon. Maj.

Sec. Lt. A. Cumming to be hon. Capt.

H. H. Lewis is granted a temp. hon. commn. as Lt. while empld. as Asst. Inspector, A.I.D., Nov. 26th.

War Office, Dec. 4th.

The following extract is from a dispatch dated Nov. 15th from Gen. the Earl of Cavan, K.P., K.C.B., M.V.O., Commanding-in-Chief British Forces in Italy, and covering the operations between Sept. 15th, 1918, and the final defeat of the Austrian Army:—

The Royal Air Force, under the command of Col. P. B. Joubert de la Ferté, D.S.O., took a very prominent part in the battle, harassing the enemy's retreat so effectually that many batteries and thousands of prisoners fell into our hands that would have otherwise escaped.

War Office, Dec. 5th.

Regular Forces.—Establishments.—R.F.C.—Mil. Wing.—Adjt. Sec. Lt. W. C. Clark, from an Equipment Officer, 3rd Cl., and be temp. Capt. (with pay and allowances as Lt.) while so empld. (March 1st).

Schools of Instruction.—Schools of Mil. Aeronautics.—Asst. Instr.—(Graded as an Equipment Officer, 2nd Cl.).—Temp. Sec. Lt. W. Dawson, Gen. List, from an Asst. Instr. (graded as an Equipment Officer, 3rd Cl.), and to be temp. Lt. while so empld. (Feb. 25th).

Air Ministry, Dec. 6th.

R.A.F.—The following temp. appts. are made at the Air Ministry:—Dep. Master-Gen. of Personnel.—Col. (actg. Brig.-Gen.) F. L. Festing, C.M.G., and to retain the actg. rank of Brig.-Gen. whilst so empld., vice Lt.-Col. (actg. Brig.-Gen.) G. Livingston, C.M.G., who relinquishes the actg. rank of Brig.-Gen., Nov. 25th.

Dir. of Air Personal Services.—Lt.-Col. (actg. Col.) R. H. More, C.M.G., and to be actg. Brig.-Gen. whilst so empld., Nov. 25th.

Staff Officer, 2nd Cl.—Lt. (actg. Capt.) F. M. Iredale, and to be actg. Maj. whilst so empld., Nov. 1st.

Staff Officers, 3rd Cl.—And to be actg. Capts. whilst so empld., if not already holding that rank:—Capt. W. R. Baldwin-Wiseman, Sec. Lt. (Hon. Lt.) C. M. Hennell, Sec. Lt. A. Holmes, Nov. 18th.

The following temp. appts. are made:—Staff Officer, 1st Cl.—Capt. (actg. Maj.) H. St. C. Smallwood, and to be actg. Lt.-Col. whilst so empld., vice Lt.-Col. L. Jenkins, D.S.O., M.C., Nov. 23rd.

Staff Officer, 3rd Cl. (Q.)—Sec. Lt. (Hon. Lt.) J. G. Dyson, and to be actg. Capt. whilst so empld., Oct. 12th.

Flying Branch.—Maj. A. G. R. Garrod, M.C., to be actg. Lt.-Col. while empld as Lt.-Col. (A), Nov. 11th.

Maj. (actg. Lt.-Col.) B. L. Huskisson, D.S.C., to be Maj. (A.), and to relinquish the actg. rank of Lt.-Col., Nov. 20th.

Capt. A. P. D. Hill to be actg. Maj. while empld. as Maj. (A.), Nov. 11th.

Capt. F. L. C. Butcher to be actg. Maj. while empld. as Maj. (A'shp), Nov. 12th.

Lt. F. B. Grant to be actg. Capt. while empld as Capt. (A.) from (T.), Nov. 19th.

Lt. R. G. Young to be Lt. (A.), from (Ad.), Dec. 2nd.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A.):—920027 J. E. Dionne, Aug. 13th; 41822 C. R. C. Pink, Aug. 24th; 270561 A. Laskey, 96036 W. H. Styles, 50839 E. L. Fuller, 49370 A. Homewood, 5645 S. J. Brain, Aug. 28th; 200236 F. C. Spencer, S/7453 E. H. Fry, 355251 H. W. Iles, 40170 C. T. Packham, 260189 A. S. Vaughan, Aug. 29th; 40934 G. A. Willcox, Aug. 30th; 260219 H. H. Jackson, 94823 W. N. Jackson, 735150 F. W. Riley, 260693 R. C. Cary, Aug. 31st; 110910 N. M. Harrison, Sept. 6th; 260360 J. F. White, Z/374 H. F. Harper, 260310 C. E. Fabian, Sept. 7th; 270070 A. T. Wood, 533028 H. J. Gambling, 4353 C. O. Hinks, Sept. 9th; 200242 W. A. Warman, Sept. 10th; 110843 J. G. Barrett, 625093 J. V. Edwards, Sept. 11th; 110783 H. S. Hopkins, 618293 H. F. Grannell, 730964 P. W. Evans, 265328 F. B. Brutnel, Sept. 12th; 624376 O. G. Meredith, 320925 E. A. Bateman, 345141 W. Williams, Sept. 13th; 733840 W. J. Ramsbottom, 200652 J. H. Damon, 1208 G. P. Mitchell, 40059 E. C. Tasker, S/2/018236 G. W. Curry, 06400 W. T. K. Wallington, 260212 W. R. H. Robinson, 200010 J. Rae, Sept. 14th; 280515 R. J. Moyse, 56129 P. D. Fenton, Sept. 15th; 880341 A. E. Bedborough, Sept. 16th; 240253 W. G. A. Freke, 316003 A. Anderson, Sept. 18th; 202957 H. M. Fletcher, 7865 S. T. Marshall, S/7670 J. W. P. Cartwright, 6275 J. S. Smith, Sept. 20th; 137984 A. P. K. Hattersley, Sept. 21st; Z/271 J. J. Antoncich, Sept. 22nd; 57106 C. F. Steventon, Sept. 24th; 50481 T. Jones, 101525 G. E. Ellams, 265744 J. J. Marks, Sept. 25th; 100155 H. Frow, 2169 F. Dorsey, 1944 J. E. Hunt, 50782 H. H. Salmon, 320281 A. L. Farmer, 502469 R. H. Ford, 240181 L. H. Fray, 270099 L. J. Swann, 624192 R. C. Taylor, Sept. 26th; 137973 L. Buckley Bridge, T/4/237489 E. G. Marchant, Sept. 27th; T/232862 J. John, Sept. 28th; 100223 W. Graham, 56782 W. R. Hatfield, Sept. 29th; 554832 L. C. Le Maitre, 270595 T. Wallis, M2/204956 T. T. Laker, 106116 J. W. Craig, 201137 R. J. Folland, 528563 W. E. Johnson, Z/247 F. Krockel, 94791 G. S. S. Johnston, Sept. 30th; 137997 F. N. Quy, Oct. 1st.

T. Dowsett is granted a temp. commn. as Sec. Lt. (A.), Oct. 5th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (K.B.):—L/11036 E. Young, 1275 L. G. Howard, 705739 J. A. Neill, 265193 H. P. E. Jones, 11133 J. C. Preston, May 25th; 36525 B. D. Bolas, 403846 C. Watkins, M2/106013 L. A. Gray, 20217 A. G. Renecle, 9449 J. W. Haynes, July 27th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers):—184940 C. F. Lawson, 184972 W. E. Schoch, Aug. 24th; 403590 C. G. H. C. Thomas, Aug. 25th; 538256 S. V. Spiller, 260086 R. E. Norrish, Aug. 28th; 240625 R. T. Rick, 14516 F. G. Carter, T/4/056656 H. A. Fourte, 35348 A. S. Robinson, 11832 I. Fender, 355482 W. Wright, 528732 R. E. Hudson, 203453 H. Milward, 28834 E. Maloney, Aug. 31st; 184956 W. H. Oldfield, 200652 F. L. S. Dennett, Sept. 1st; 845 G. B. Hopwood, 32281 W. Robinson, 28078 G. Winstanley, 320252 G. Godley, 0260 H. Hall, 280132 G. Hill, Sept. 7th; 50901 L. F. Bromwich, 404005 C. H. Phillips, 10148 W. S. Swann, 137993 O. R. Schoonraad, 200383 J. C. Dunbar, Sept. 14th; 290855 F. Skelley, DM2/228808 W. C. Allardyce, Sept. 21st; 37055 G. T. Williams, Sept. 25th.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. D. G. Porter (Sec. Lt., R.F.A., T.F.), Aug. 6th; Sec. Lt. R. H. Shepherd (Sec. Lt., Suff. R.), Nov. 16th; Capt. L. W. Hopkins (Capt., E. Ont. R.), Nov. 18th; Lt. J. A. Fitz-Herbert, M.C. (Lt., R.G.A., S.R.), Nov. 20th.

The following Capts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Capt.:—C. F. M. Chambers, D.S.O., H. G. Holden, D.S.C., Dec. 7th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—L. A. W. Clift, F. Green, J. E. Ostler, G. H. R. Price (caused by wounds), H. E. Rachar, Dec. 7th.

The following Lts. relinquish their commns. on account of ill-health:—(Hon. Capt.) S. E. Goodwin (Capt., Lpool. R., T.F.), (contracted on active service), G. Hackett (Army Cyclists Corps), Dec. 7th.

Sec. Lt. G. R. Klinck relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Dec. 7th.

The surname of Sec. Lt. C. Walter is as now described, and not Walker, as stated in "Gazette," June 14th.

The Christian names of Sec. Lt. Cecil Denis Davidson are as now described, and not as stated in "Gazette," Oct. 11th.

The notifications in "Gazette," Oct. 8th, concerning the following Sec. Lts. are cancelled:—H. J. Philp, M. J. Moffatt, C. W. Duncan.

The notification in "Gazette," Nov. 1st, concerning Sec. Lt. G. Dignam, is cancelled.

Administrative Branch.—W. F. Routley (temp. Capt., Manch. R.) is granted a temp. commn. as Capt., July 2nd, seny. April 1st, and to be actg. Maj. whilst empld. as Maj.

Capt. R. R. Freeman to be Capt., from (S.O.), Sept. 15th.

J. A. Bonnyman (Lt., Welsh R.) is granted a temp. commn. as Lt., Oct. 21st, seny. April 1st, and to be actg. Capt. whilst empld. as Capt.

Lts. (A.) to be Lts.:—D. A. Wright, Sept. 17th; T. E. Carley, Nov. 12th; H. C. Marr, Nov. 20th.

Lt. D. H. Thomas to be Lt., from (O.), Oct. 15th.

The following are granted temp. commns. as Sec. Lts., with seny. April 1st:—P. H. Budds (temp. Lt., E. Kent R.), Aug. 21st; A. A. Watson (Lt., R.F.A.), Nov. 4th.

Sec. Lt. W. J. Terry to be actg. Lt. while empld. as Lt., Nov. 5th.

The following are granted temp. commns. as Sec. Lts., and to be actg. Lts. while specially empld.:—R. Needham, Nov. 15th; J. G. Ramsey, Nov 20th; G. W. Webb is granted a temp. commn. as Sec. Lt., Nov. 11th.

A Word to the Wise!

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The following relinquish their commns. on ceasing to be empld.:—Lt. (actg. Capt.) G. H. Puckle (Lt., I.A.R.O.), Oct. 2nd; Lt. T. A. W. Foy (Lt., R.E.), Nov 11th.

Lt C Clarke relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Dec 7th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec Lt.:—L. Y. Erskine, R. J. S. F. Sparks, J. Tyllyer, J. A. Whalley (contracted on active service), Dec. 7th.

Sec. Lt. S. C. Francis resigns his commn., Dec. 7th.

The surname of Lt. (actg. Capt.) W. L. Collins is as now described, and not Collis, as in "Gazette," Nov. 8th.

The surname of Lt. N. S. Wolfendale is as now described, and not as in "Gazette," Oct. 15th.

The notification in "Gazette," Aug. 27th, concerning Sec. Lt. (actg. Lt.) H P Souter is cancelled.

The notification in "Gazette," Sept. 17th, concerning Lt A Watson is cancelled.

The notification in "Gazette," Nov. 26th, concerning Lt E. W. Keep is cancelled.

TECHNICAL BRANCH.—Maj. A. Cleghorn to be actg. Lt.-Col. while empld. as Lt.-Col., Nov. 15th.

Lt. (actg. Capt.) H. G. Gibbs to be actg. Maj. while empld. as Maj. (Grade B), July 26th.

Lt. (actg. Capt.) C. W. Jamieson retains the actg. rank of Capt. while empld as Capt. (Grade A), from (Ad.), Oct 4th. (Substituted for notification in "Gazette," Nov. 22nd.)

L. H M. Bennett is granted a temp. commn. as Capt. (Grade A), July 24th.

R. E. Threlfall (Lt., R.E.) is granted a temp. commn. as Lt., Sept. 14th, seny. April 1st.

G. R. Hogg (Sec. Lt., R.E.) is granted a temp. commn. as Sec. Lt. (Grade A), June 21st, seny. April 1st, and to be actg. Lt. while empld. as Lt.

Sec. Lt. H. R. Soutter to be actg. Lt. while empld. as Lt. (Grade B), Aug. 18th.

Sec. Lt. F. J. Lyons-Davies (Sec. Lt., R.E, T.F.) relinquishes his commn. on ceasing to be empld., Nov. 13th.

Capt W. A. R. M. McRae (Capt., R. Scots) relinquishes his commn. at his own request, Nov. 30th.

Sec. Lt. (Hon. Lt.) E. A. Roberts relinquishes his commn on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Dec. 7th.

Sec. Lt. (Hon. Lt.) H. Shackell (Lt., Middx. R., T.F.) relinquishes his commn. on account of ill-health caused by wounds, Dec. 7th.

CHAPLAINS BRANCH.—The following are granted temp. commns. as Chaplains with the relative rank of Capt.:—Rev. J. Shelly, Dec. 2nd; Rev. G. B. Allen (late temp. Chaplain to the Forces, 4th Cl., A.C.D.), Dec. 3rd, Rev. K. B. Somerville, Dec. 4th.

MEMORANDA.—Capt J. H. Cotton to be actg. Maj. while holding a special appt. at the Ministry of Munitions, Nov. 1st.

To be actg. Capts. while holding special appts. at the Ministry of Munitions:—Sec. Lt (Hon. Lt.) D. M. Mackie, Nov. 4th; Lt. J. H. F. Pilling, Nov. 5th.

The following relinquish their commns. on ceasing to be empld.:—Sec. Lt. E. A. R. Fowles, Aug. 31st, Capt. E. L. D. Bartley (Lt., R.N.), Nov. 23rd

WAR OFFICE, Dec. 7th

CORRECTION.

The awards of Chevalier of the Order of Leopold II. to the Warrant Officers, N.C.Os. and Men, published in the Seventh Supplement to the "London Gazette," dated November 29th, 1918, are hereby cancelled.

An amended list will be published shortly.

ADMIRALTY APPOINTMENTS.

The following appointments have been made:—

DEC. 5th.—Asst. Prins.—Miss H. M. Kebbell, to Lee-on-Solent (tempy.). 14th).

Senior V.A.D.—Miss A. E. Cranmer, to Felixstowe Air Station (14th).

THE CASUALTY LIST.

MILITARY.

Reported Dec. 4th.

The following officers, who were prisoners in Turkey, have been released:—

Begg, Lt. M. C., M.C., Rif. Brig., attd. R.F.C.; Blake, Lt. J. W., K.R.R.C., attd. R.F.C.; Hancock, Lt. H. L. W., R.F.A., attd. R.F.C.; MacRae, Sec. Lt. J. D. G., Sea. Highrs., attd. R.F.C.; Mills, Lt. A. S., Yeo., attd. R.F.C.; Pakenham-Walsh, Lt. L. H, Ches. R., attd. R.F.C.; Pryce, Sec. Lt. F. M., S. Wales Bord., attd. R.F.C.; Taylor, Lt. W., E. Lan. R., attd. R.F.C.; Woolley, Capt. C. L., R.F.A., attd. R.F.C.

Reported Dec. 5th.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Morgan, Sec. Lt. T. P., R.F.C.; Sugden-Wilson, Capt. W. H., Yeo., attd. R.F.C.; Whitehouse, Sec. Lt. S. L., R.F.C.

Reported Dec. 6th.

The following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Houghton, Lt. D. L., Middx. R., attd. R.F.C.; Lonsdale, Lt. V. O., R.F.A., attd. R.F.C.

Reported Dec. 7th.

The following officer, who was a prisoner in Germany, has been released:—

AUSTRALIAN FORCE.—Rhodes, Lt. C. W., F.C.

Reported Dec. 9th.

The following officer, who was a prisoner in Bulgaria, has been released:—

Gaynor, Lt. H. F., Lond. R., attd. R.F.C.

Reported Dec. 10th

AUSTRALIAN FORCE.—PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Hammond, Lt. T. J., F.C.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England:—

Castle, Sec. Lt W. F. L., R.F.C.; Collier, Sec. Lt. A. C., R.F.C.; Ellam, Lt. H. J., R.F.C; Frith, Sec. Lt. R. G., R.F.C., Hart Davies, Lt. H. R., R.F.A., attd. R.F.C.; Ibbotson, Lt. H., R.F.C.; Robertson, Sec. Lt. J. G., R.F.C.; Thamer, Sec Lt O., R.F.C.

AUSTRALIAN FORCE.—Agnew, Lt I. C. F., F.C.

CASUALTIES AMONG WT.OS, N.C.OS, AND MEN. THE DATES ARE THOSE OF THE OFFICIAL LIST.

The following soldiers, who were prisoners of war in Germany, have been released, and have arrived in England:—

R.F.C.—Coleman 10805 2nd Air Mech. E. R. A. (Clapham, S.W.); Donald 3022 Cpl. T. (Dunfermline); Foley 438 Cpl. R. (Birmingham); Goodchild 25 Flt. Serjt. H. (Gosport); Perry 8102a 1st Air Mech. E. G. (Stafford); Shaw 4995 1st Air Mech. P. (Highgate, N.); Taylor 3613 Serjt. H. (Leeds.)

AIR FORCE.

Reported Dec. 4th.

KILLED.—Annis, Lt. W. F.
Bourns, Lt. A. E.
Coe, Sec. Lt. D. E.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Clarke, Lt. H. W.
McCaig, Lt. P.
Nash, Capt. T. W.
Newby, Lt. W.

DIED OF WOUNDS.—Aldrich, Sec Lt. L. E.
Crawford, Sec. Lt. J. C.
Fawcett, Sec. Lt. F.

DIED.—Evans, Lt. E. L.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONER OF WAR, NOW REPORTED PRISONER OF WAR.—Pym, Lt. F. G.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONERS OF WAR, NOW REPORTED PRISONERS OF WAR.—Dunlop, Sec. Lt. J. M.
Harley, Lt. V.
Ingram, Capt. R. S. S.
Jackson, Lt. W. E.
Luard, Sec. Lt. R. B.
McPhee, Lt. R.
Porter, Sec. Lt. A. C.
Stringer, Sec. Lt. J. S.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Ambler, Lt. J. J.
Bartlett, Sec. Lt. G. R.
Dandy, Sec. Lt. J. M.
Fellows, Lt. H. V.
Jackson, Sec. Lt. W. R.
Keble, Sec. Lt. F. J.
MacFarlane, Lt. W. K.
Yelverton, Sec. Lt. C. N.

REPATRIATED.—Broder, Capt. P. A.; Brown, Sec. Lt. C. H.; Castle, Sec. Lt. W. F. L.; Clements-Finnerty, Lt. H.; Collier, Sec. Lt. A. C.; Davis, Capt. D. W.; Geen, Lt. C.; Griffin, Lt. R. T.; Griffiths, Lt. C. D.; Halford, Lt. E. A.; Harvey, Lt. E. B.; Hoblyn, Hon. Capt S. E.; Inge, Lt. R. M.; Leech, Capt. J. C.; Lerwill, Lt. O.; Lindop, Capt. V. S. E.; Mayne, Capt. H. G. L.; McEwan, Lt. J. G.; Nichol, Capt. R. W.; Odling, Lt. V. G.; Pearson, Lt. L. J.; Robertson, Lt. J. G.; Russell, Lt. A. L.; Thamer, Sec Lt. O.; Tudor-Hart, Lt. W. O. T.; Van Nostrand, Lt. C. I

Reported Dec. 6th.

KILLED.—Buckingham, Sec Lt. P. E.
Caple, Lt. L. N.
Cooper, Lt. W. J.
Hughes, Lt. W.
Hunt, Sec. Lt. H. H.
Logan, Lt. T. E.
McElhinney, Sec. Lt. A. M.
Manders, Sec. Lt. A.
Norman, Lt. A. G. B.
Proctor, Sec. Lt. L. A. H.
Rushton, Sec. Lt. W.
Salton, Sec. Lt. W. K.
Symondson, Capt. V. F.
Taylor, Sec. Lt. J. H.
Wilkinson, Sec. Lt. E. F.
Williamson, Sec. Lt. R. B.

DIED.—Crummey, Capt. F. C.
Paull, Lt. C. W. T.
Speake, Sec. Lt. T. G.

PREVIOUSLY REPORTED WOUNDED, NOW REPORTED KILLED.—Hodgson, Capt. F. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Baker, Sec. Lt. T. M.
Smith, Lt. H. S.

PREVIOUSLY REPORTED MISSING, BELIEVED WOUNDED AND PRISONERS OF WAR, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Anslow, Sec. Lt. F. F.
Brown, Sec. Lt. J. W.
Pearson, Sec. Lt. B. C.
Reveley, Lt. P. T. A.

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Thorpe, Sec. Lt. C. E.
Valentine, Lt. J.
Walker, Sec. Lt. J. C.
Wilcox, Sec. Lt. C. H.

PREVIOUSLY REPORTED MISSING, BELIEVED PRISONER OF WAR, NOW REPORTED PRISONER OF WAR.—Conover, Lt. C. C.

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Cawley, Sec. Lt. C. F.
Harrison, Sec. Lt. A. G.
Raymond, Sec. Lt. I. B.
Sorley, Sec. Lt. J. T.
Thomson, Sec. Lt. D. A.
Wilson, Sec. Lt. W. A.

REPATRIATED.—Abey, Sec. Lt. H. R.; Agnew, Lt A. B.; Carey, Lt. J. G.; Coates, Sec. Lt. S.; Cowley, Capt. A. T.; de Arcy Levy, Lt. J. M.; Dee, Sec. Lt. D. M.; Fox, Lt. D. S.; Gilchrist, Lt. W. W.; Gompertz, Sec. Lt. H. C. T.; Goodson, Lt. E. J.; Greenwood, Lt. P. G.; Gwyer, Lt. N. E.; Hall, Lt. E. W. O.; Hamlet, Sec. Lt. H. A.; Harcourt-Vernon, Capt. A. A.; Harrison, Lt. W. L.; Henry, Sec. Lt. S. S.; Hughes, Sec. Lt. G. E.; Hunt, Capt. R. E. B.; Jerrard, Lt. A., V.C.; McDonald, Lt. D. C.; Morgan, Sec. Lt. T. P.; Schofield, Lt. E. R. C.; Smith, Sec. Lt. N.; Strang, Lt. A. R.; Whitehouse, Sec. Lt. S. L.

Reported Dec. 7th.

KILLED.—Allen, Sec. Lt. R. F.
Baird, Lt. W. D. H.
Evans, Lt. P. L.
Garside, Sec. Lt. J.
Halfpenny, Lt. W. H.
Horridge, Capt. J. L.
Jassby, Sec Lt. H. W.
Little, Sec. Lt. R. K.
Mackay, Lt. M. W. H.
Russell, Capt. H. T. F., M.C.
Wodehouse, Lt. C. E.

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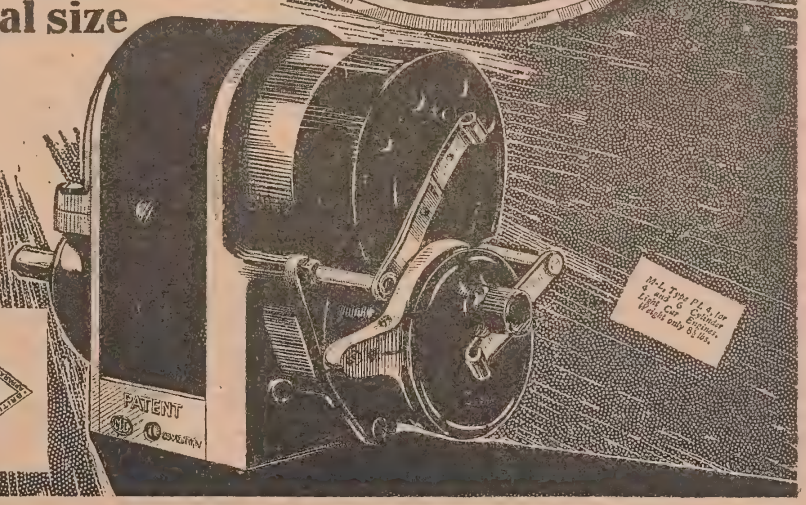
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Wounded.—Blake, Lt. R. A.; Todd, Sec Lt. J. D.
Missing.—Woolley, Sec. Lt. F. W.
Previously reported Missing, now reported Wounded and Prisoner of War.—Cornwell, Sec. Lt. F.
Previously reported Missing, now reported Prisoners of War.—
Dunn, Sec. Lt. M. W.
Phillips, Sec. Lt. P. L.
Thornton, Sec. Lt. W. R
Prisoners of War.—McCrea, Sec. Lt. P. C. S.
Timmins, Sec. Lt. L.
Repatriated.—Amm, Lt. E. O.; Beare, Capt S. G.; Berry, Sec. Lt. H. J.; Calow, Lt. R.; Cobham, Lt. R. L.; Forder, Lt. E. G; Frazier, Capt. R. W.; Gallagher, Lt. E. G.; Gaynor, Lt. H. F.; Hart-Davies, Sec. Lt H. R.; MacDonald, Sec. Lt. R.; O'Dwyer, Capt. J. E. A.; Petter, Capt R. C.; Robins, Lt. S. M.; Stopner, Lt. A. C.; Taylor, Lt. E. E.
Reported Dec. 8th.
Died of Injuries.—Booth, Sec. Lt. L. H.
Kirton, Lt. R. J.
Died.—Bradburn, Lt. F. J.
Brutey, Capt. H. R.
Cartwright, Capt. A. W. C.
Child, Sec. Lt. M. H.
Coltson, Capt. C. S., D.F.C.
Creese, Lt. A. R.
Humble-Crofts, Capt. A. M.
Edwards, Lt. B. W.
Harding, Sec. Lt. C. G.
Haynes, Sec. Lt. E. B.
Kidd, Sec. Lt. J. A.
Morrison, Lt. E. A.
Poole, Lt H.
Rigby, Lt J.
Wounded.—Shearer, Maj. A. B.
Missing.—Proffitt, Sec. Lt. J. T. R.
Repatriated.—Cawley, Sec. Lt. C. F.; Davidson, Sec. Lt. L. K.; Dobell, Lt.-Comdr. H., Fellowes, Lt.-Col. P. F. M.; Hilton, Sec. Lt. T. R.; Hunt, Capt. P. B. G.; McNamara, Sec. Lt. J. F.; Montgomery, Capt. K. B.; Newey, Sec. Lt. T.; Purvis, Lt. W. F.; Dolling-Smith, Lt. C. H.
Reported Dec. 9th.
Killed.—Hickey. Capt. C. R. R., D.F.C.
Huby, Sec. Lt. O. M.
Scarr, Lt. G. C.
Died.—Jones, Sec. Lt. H. L.
Kendall, Sec. Lt. G.
Previously reported Missing, now reported Killed.—Dixon, Sec. Lt H. G.
Repatriated.—Benjamin, Lt. A. L.; Bing, Sec. Lt. W. J.; Bugge, Sec. Lt. F. H.; Claxton, Lt. W. G.; Comerford, Sec. Lt. J. J.; Cooke, Lt. P. B.; Coope, Lt. N. N.; Courtney, Lt. W. E. L.; Crawford, Capt. C.; Crossley, Sec. Lt. H.; Dickey, Capt. R. F. L.; Ellam, Lt. H. J.; Erith, Sec Lt. R. G.; Fulford, Lt. E.; Gill, Lt. C. E. G.; Gray, Capt. J. A.; Gross, Lt. C. R.; Gunn, Lt. J. C.; Helwig, Lt. N. W.; Houghton, Lt. D. L.; Hoy, Capt. P. C.; Ibbotson, Lt. H.; James, Lt. L. R.; Jenner, Lt. P. C.; Kelly, Sec. Lt. J. M.; Kewley, Lt. B. H.; Lindley, Capt. A.; Lonsdale, Sec. Lt V. O.; MacDonald, Lt. R. M.; Mawer, Sec. Lt. A. L.; Murray, Capt. D. G.; Newstead, Sec. Lt. C. W.; Ogilvy, Lt. W. F.; Raymond, Sec Lt. L. B.; Rowan, Lt. A.; Sinclair, Lt. L. R.; Smith, Lt. G. T.; Spencer, Sec. Lt. W. A. L.; Thomsen, Capt. C. J.; Thomson, Sec. Lt. D. A.; Thresher, Sec. Lt. C. E. W.; Tracey, Lt. H. A., Tresham, Sec. Lt. W. H.; Tussaud, Lt. H. C.; Wilson, Sec. Lt. W. A.

Casualties among W.O.'s, N.C.O.'s, and Men of the R.A.F. The Dates are those of the Official List.

Killed.

Dec. 5th.—Fawcett 3703 Serjt.-Mech. W. R. (Canterbury); Mahoney 241876 1st Pte. W. J. (Richmond); Westley 300108 L.-Cpl.-Obsr. W. (Walthamstow).
Dec. 7th.—Wynn 219306 Cpl. A. H. (Worcester).

Died.

Dec. 4th.—Chubb 216250 1st Pte. H. W. (Fulham, S.W.); Denney 51714 1st Pte. G. (Southwark Bridge Road, S.W.); Evans 76471 3rd Air Mech. T. J. (Pentre); Higgin 127756 2nd Pte. J. L. (Bradford); King 10369 1st Air Mech A. J. (Oxford Street, W.); Lundy 76592 2nd Air Mech. C. E. (Weston-super-Mare); Noble 83462 1st Air Mech. F. W. (Manchester); Parker 22928 1st Air Mech. L. E. (Finsbury Park, N.); Philip 17912 1st Air Mech. (actg. Cpl.-Mech.) C. (Strathdown); Searle 59761 3rd Air Mech. J. (Deptford); Stamper RN/K2010 Cpl.-Mech. A. (Folkestone Junction); Walker 52721 2nd Air Mech. H. F. (Hanwell).
Dec. 5th.—Fisher 50475 1st Pte. H. (Hackney Road, E.).
Dec. 7th.—Adams 215066 Cpl. R. (London, S.W.); Bolton 369 Ch. Mech. A. (Shepherd's Bush, W.); Coleman 225261 Air Mech. C. J. B. (Hammersmith, W.); Day CM211539 Cpl. A. T. (Brighton); Feather 223607 2nd Air Mech. D. (Yorkshire); Foyle 263944 Serjt.-Mech. T. (Harlesden); Gatrill, Officer's Steward, 3rd Cl., E. (Colchester); Grimme 66996 3rd Air Mech J. (Bromley); Guy 79556 2nd Air Mech. G. T. (Liverpool); Harvey 238070 2nd Pte. T. (Leyton, E.); Pugh 242713 2nd Pte. H. E. L. (Cheshire); Siggers 408767 3rd Air Mech. D. (Goodmayes); Shute 223049 1st Air Mech. C. W. (Devon); Twist 216495 Cpl. D. R. (Fulham); Wicks 225280 2nd Air Mech. E. H. (London, W.C.).

Wounded.

Dec. 4th.—Adair 220730 Serjt.-Mech. R. (Belfast); Dudson 111227 2nd Pte. F. (Ardwick); Emery 118711 3rd Air Mech J. F. H. (Hammersmith); Kirk 9479 1st Air Mech. E. (Caister, Lincs.); Knight 193607 2nd Pte. W. J. (Folkestone); Lenney 88702 3rd Air Mech. W. (Ilkeston), MacKenzie 406816 1st Pte. D. (Leven); McMillan 127939 3rd Air Mech. P. (Glasgow); Running 101201 2nd Air Mech. J. (Glasgow); Parry 160523 3rd Air Mech. F. (Ashton-under-Lyne); Sedgwick 44268 2nd Air Mech. W. A. (Bow); Stevenson 281812 2nd Pte. A. (Penge); Tarver); 100626 Serjt.-Mech. J. (Cheltenham).
Dec. 5th.—Evans 134633 3rd Air Mech. W. E. (Wembley); King 44350 1st Air Mech. F. C. (Hornsey); Randall 133966 3rd Air Mech. G. H. (Birmingham); Williams 50304 Air Mech. T. (Furry Port, South Wales).
Dec. 7th.—Barlow 70544 Serjt. G. (Manchester); White 210391 Serjt. G. I. (Lewisham, S.E.).

Missing.

Dec. 4th.—Aitken 175333 Serjt.-Mech. G. (Whitecairns, Aberdeen); Metcalfe 24236 3rd Air Mech. C. W. (Gomersal, near Leeds); Newbury 64066 3rd Air Mech. W. (East Dulwich, S.E.).
Dec. 7th.—Easman 212580 2nd Pte. W. A. (Barnes); Joysey 222304 Serjt.-Mech. R. S. (Leyton); Sutcliffe 211951 2nd Pte. (A.G.L.) E. (Yorks).

Died of Wounds.

Dec. 5th.—Robinson 6302 Serjt.-Mech. A. (Southwark); Next 110709 Serjt.-Mech. R. C. (Bath).

Prisoner of War

Dec. 5th.—Wright 63901 Serjt.-Mech. J. R. (Hendon, N.W.).

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WOUNDED AND PRISONER OF WAR.

DEC. 5th.—Mason 9356 Serjt.-Mech. W. C. E. (Manor Park, E.).

PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.

DEC. 5th.—Davies 4356 Serjt.-Mech. T. H. C. (Rhondda Valley, South Wales); Ellery 226194 1st Pte. F. A. (Walthamstow); May 224694 1st Pte. J. L. (Hoddesdon).

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.

DEC. 5th.—Crites 98457 Serjt.-Mech. C. P. (Simcoe, Ontario, Canada); Harbour 92457 Serjt.-Pilot A. G. T. (Folkestone); Thomson 100105 Serjt. F. S. (Liverpool).

PERSONAL NOTICES.

NAVAL.

DEATH.

HINSLEY.—Lt. Wilfrid Hinsley, R.A.F. (late R.N.), who died on Dec. 6th in hospital at Salonika of pneumonia following influenza was the second son of C. J. Hinsley, Ashenground House, Haywards Heath, Sussex. He was 27 years of age.

MARRIAGES.

GRAHAM—FARMER.—On Nov. 30th, at Rushall Church, Maj. R. Graham, D.S.O., D.S.C., R.A.F., was married to Phyllis (Nancy), only daughter of Henry E. Farmer, of Rushall Hall, Walsall, by the Rev. A. Talbot.

NEWTON-CLARE — SWANN.—On Dec. 3rd, at the Parish Church, Aylesbury, Maj. Edward Thomas Newton-Clare, D.S.O., R.A.F. (late Sqdn. Comdr., R.N.A.S.), eldest son of the late Edward Shackfield Newton-Clare, M.R.C.S., Calne, Wilts, and of Mrs. Haworth, The Ferns, Beckenham, Kent, was married to Aileen Yvonne Marianne Swann, A.R.R.C., elder daughter of Maj.-Gen. Swann, C.B., of Hartwell, Bucks, by the Rev. V. L. Whitechurch, M.A., Vicar, assisted by the Rev. Lionel G. Edwards, M.A., Vicar of Litlington, Cambs.

* * *

Flt. Sub-Lt. E. C. Stocker, R.N.A.S. (attd. 22nd Wing, R.F.C.), was reported missing on March 27th last, near Dompierre, Somme, with Aerial Gunner Claude Rendle, R.N. Information is desired by Mrs. Stocker, 50, Albany Road, Salisbury.

MILITARY.

DEATHS.

ARBUTHNOT.—Lt. Ronald G. U. Arbuthnot, 16th Lancers, attd. R.A.F., was the youngest son of the late Col. George Arbuthnot, R.H.A., of Norton Court, Gloucester, formerly M.P. for Hereford, and of Mrs. Arbuthnot, of the Cedar House, Hillingdon, Middlesex. He was educated at Summerfields and Eton, and was a keen cross-country rider. At the outbreak of the war he enlisted in the 19th Hussars, receiving a regular commission in the 16th Lancers on September, 1914. Later he volunteered for the Cavalry Machine Gun Corps, with which unit he was seriously wounded at Bourlon Wood, after three years' service overseas. On returning to England, he became attached to the R.A.F., and was killed while flying at London Colney, Hertfordshire, on Dec. 3rd.

BRODIE.—Capt. Philip Wyndham Brodie, Seaforth Highlanders, attached R.A.F., whose death was announced recently, who died at Taranto on Nov. 18th, aged 31, was educated at Uppingham, and passed into Sandhurst in 1906. He was gazetted to the 1st Seaforth Highlanders in May, 1917, and joined his regiment in India in the following September. He served in the punitive expeditions against the Zakka Khels and Mohmands in 1908, and received the medal and clasp. In September, 1914, his regiment came to France, and he served in the heavy fighting near La Bassée until Christmas, when he was invalided home for some months. In May, 1915, he returned to France, and was there until November, when his regiment was ordered to Mesopotamia, where he served throughout the campaign for the relief of Kut in 1916. In the successful operations in the spring of 1917 he was attached to the R.A.F. as an observer, and receiving his observer's wing, he returned to England in September to qualify as a pilot. On obtaining his wings he was engaged as instructor for some time at Doncaster, and was on his way to Egypt for the same duty when he died of pneumonia following influenza.

CLARK.—Lt. R. A. Ronaldson Clark, M.C., R.F.A., attached R.A.F., who was killed while flying on Oct. 19th, was the son of Lt.-Col. and Mrs. Ronaldson Clark, Cricklewood, Brayhill, Douglas, I.o.M. He was 24 years of age.

MORGAN.—Capt. John Towlson Morgan, R. Welch Fusiliers, attd. R.A.F., killed in action in France on Oct. 29th last, in his 21st year, was the eldest son of the Rev. E. A. Morgan, vicar of St. Andrew's, Willesden Green, and Rural Dean of Willesden, and of Mrs. Morgan. He was educated at Arnold House, London, Haileybury, and Sandhurst. Having volunteered before he was 17, he was gazetted in March, 1915, to a commission in the 3/7th Middlesex (T.F.), which he resigned in the following September to enter Sandhurst, where he became under officer. Passing out in April, 1916, he received a commission in the R. Welch Fusiliers, and was immediately attached to the R.F.C., securing his wings after some six weeks' training, and proceeding to France. There he took part in the battle of the Somme



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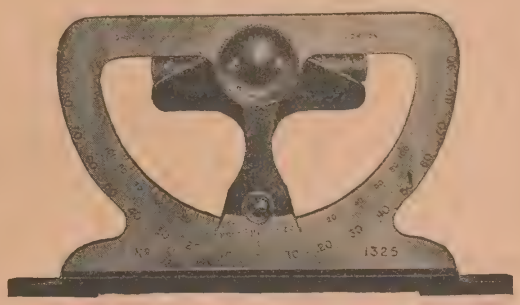
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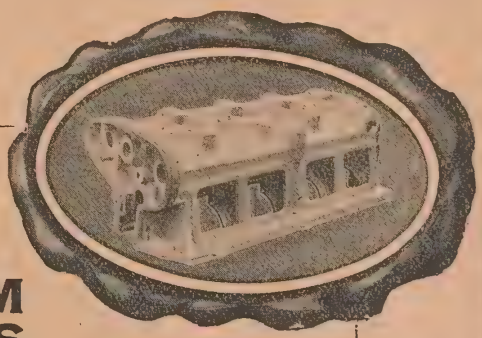
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and in the operations of the subsequent ten months, when he returned to England to instruct at Hunstanton and Dover. In January, 1918, not yet having reached the age of 20, he was gazetted captain. In the following June he recrossed as a scout to France.

NORMAN.—Lt. Alfred George Bathurst Norman, R.A.F., whose death was officially announced on Dec. 6th, was the eldest son of the Rev. Harry Bathurst Norman, of 10, Palmeira Square, Hove. He was born on Nov. 29th, 1898, educated at the Wick School, Hove, and Harrow (The Park). He joined the R.F.C. early in 1917, and had a good deal of experience in England, flying many different types of machines. Last June, after a course in night-flying and bombing at Salisbury, he joined the Independent Force in France. He crashed in a fog on Nov. 20th near Amiens, and was killed instantaneously. He was the author of a volume of poems, entitled "Ditchling Beacon."

MARRIAGE.

BUSH—MARSTON.—On Nov. 27th, at St. Barnabas, Pimlico, Capt. Reynell Owen Cromwell Bush, R. Dub. Fus. and R.A.F., eldest surviving son of the Rev. H. Cromwell Bush, Vicar of Seend, Wilts, was married to Mary Eleanor, only daughter of Mr. H. J. Marston, of Rock Ferry, Cheshire, by the father of the bridegroom.

BIRTH.

DAVIES.—On Dec. 3rd, at Patford House, Calne, Wilts, the wife of Capt. George B. Davies, Canadian Infantry and R.A.F. (née May C. Martin), of a son.

* * *

Capt. John T. Milne, M.C., R.A.F., and Obsr. Lt. Stanley Wright, M.C., both of Squadron 48, have been missing since Oct. 24th, 1917. They were flying Bristol Fighter, B.1117, in the district S.E. Dixmude. Any information from returned prisoners of war gratefully received by Mrs. John T. Milne, Lennoxwood, Windlesham, Surrey.

* * *

Sec. Lt. Donald C. Tucker, R.F.C., has been missing since March 24th, 1918. He was last seen far over the German lines flying in formation. Can any officer who was with him on that day, or in the 41st Squadron, also returned prisoners, give any information as to his fate? Information will be gratefully received by his parents, Durley Park House, Keynsham, Somerset.

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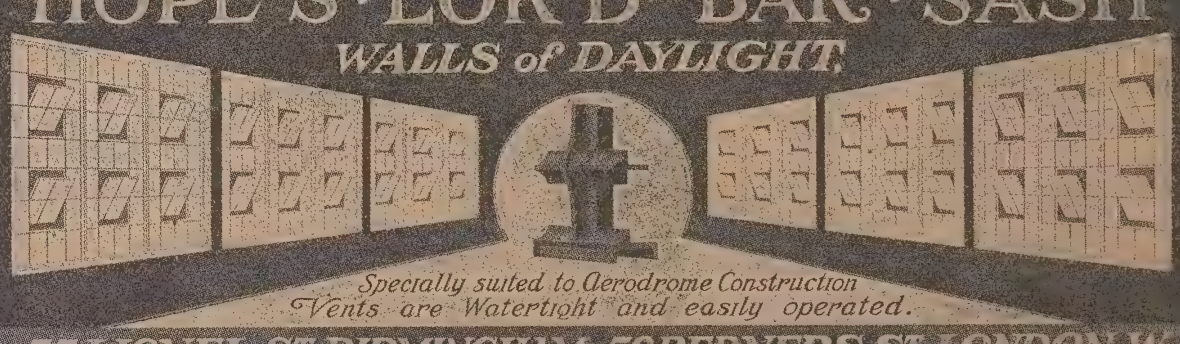
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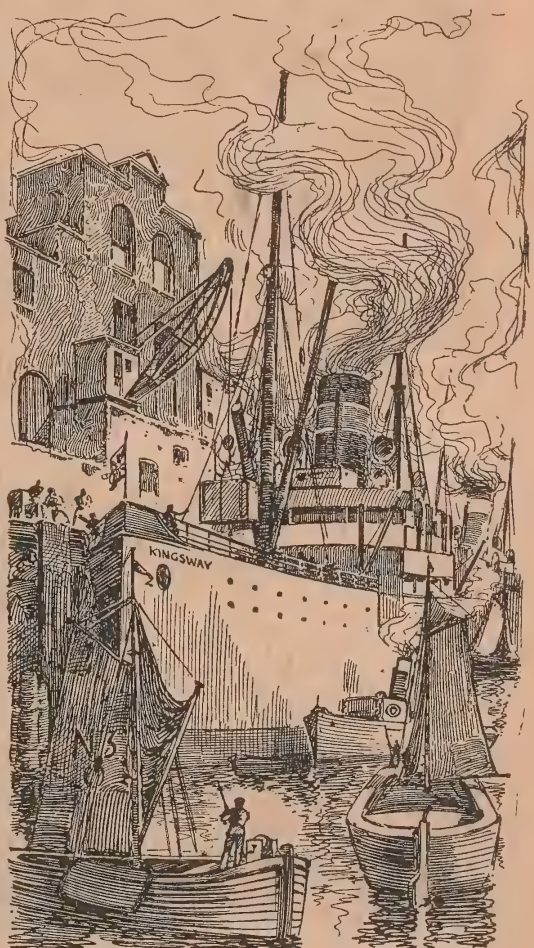
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1919.

Lt. Eric Betley, of the 82nd Squadron, R.F.C., has been missing since March 28th, 1918, east of Amiens, and is believed to be a prisoner. Any information will be gratefully received by J. E. Betley, 3, Victoria Avenue, Didsbury, Manchester.

* * *

Any information concerning Capt. Julian Mackay MacIlwaine, Royal Irish Rifles, attd. R.F.C., pilot of No. 12 Squadron, B.E.F., France, will be gratefully received by Mrs. MacIlwaine, 67, Eglantine Avenue, Belfast, Ireland.

* * *

Sec. Lt. H. C. Curtis, R.A.F., and his observer, Mr. F G. Davies, have been missing from the district east of Peronne since Aug. 21st. The machine they were flying was a D.H.9, No. 112, which is supposed to have landed intact in the German lines. Any news of these officers will be gratefully received by Mr. Curtis, of 41, Fonnereau Road, Ipswich.

* * *

Lt. Eric Betley, 82nd Squadron R.F.C., has been missing since March 28th, 1918, he was last seen east of Amiens, and is believed to be a prisoner. Any information will be gratefully received by J. E. Betley, 39, Victoria Avenue, Didsbury, Manchester.

* * *

Will any prisoner of war returning from Germany or Belgium give any information regarding Sec. Lt. F. Sadler, D.L.I., attached to the R.F.C., reported missing April 21st, 1917? Last seen flying in the Arras district a Nieuport machine, No. A. 6797. Any information will be thankfully received by J. F. Sadler, Standon, Tamworth.

AIR FORCE.

Deaths.

BEESLEY.—Sec. Lt. Anthony Blyton Beesley, R.A.F., who died on Dec. 1st at Huntingdon of pneumonia, was the second son of Dr. Beesley, Exmouth. He was 18 years of age.

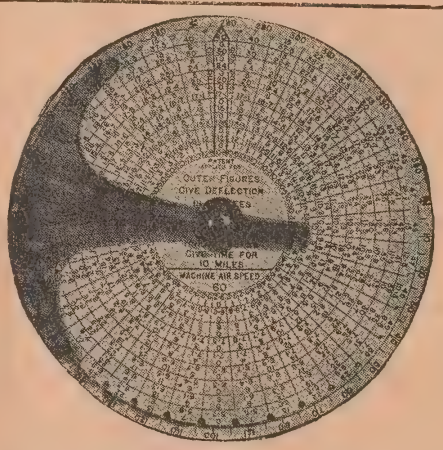
BRUCE-CLARKE.—Capt. W. R. Bruce-Clarke, R.A.F., who died on Dec. 1st at the First Eastern General Hospital, Cambs, of pneumonia following influenza, was the only son of the late William Bruce-Clarke, M.B., Oxon., F.R.C.S., Senior Surgeon of St. Bartholomew's Hospital, and of 51, Harley Street, W.

COE.—Sec. Lt. David E. Coe, R.A.F., who was killed in an aerial battle on Nov. 3rd at Valenciennes, was the only son of Mr. F. E. Coe, 144, Albany Street, Regent's Park, N.W. He was 18 years of age.

CORBETT.—Lt.-Col. Dudley Corbett, A.A.M.A., Midland Area, H.Q., R.A.F., of St. Thomas's Hospital, and late of 30, Welbeck Street, W., died suddenly at Felixstowe on Dec. 4th of influenza. He was the husband of Evelyn M. Corbett, and eldest son of the late R. S. Corbett and Mrs. Corbett.

McCONNEL.—Sec. Lt. David E. McConnel, R.A.F., who was killed at Tadcaster on Dec. 7th, while flying in a fog, was the second son of David and May McConnel, of Chantry Green, Steyning. He was 18 years of age.

McLEOD.—Lt. Alan Arnett McLeod, V.C., R.A.F., whose death from wounds was officially reported on Dec. 5th, was awarded the Victoria Cross last May. The official record of his deed was as follows:—"Whilst flying with his observer (Lt. A. W. Hammond, M.C.), attacking hostile formations by bombs and machine-gun fire, he was assailed at a height of 5,000 ft. by eight enemy triplanes, which dived at him from all directions, firing from their front guns. By skilful manœuvring he enabled his observer to fire bursts at each machine in turn shooting three of them down out of control. By this time Sec. Lt. McLeod had received five wounds, and whilst continuing the engagement a bullet penetrated his petrol tank and set the machine on fire. He then climbed out on to the left bottom plane, controlling his machine from the side of the fuselage, and by side-slipping steeply kept the flames to one side, thus enabling the observer to con-



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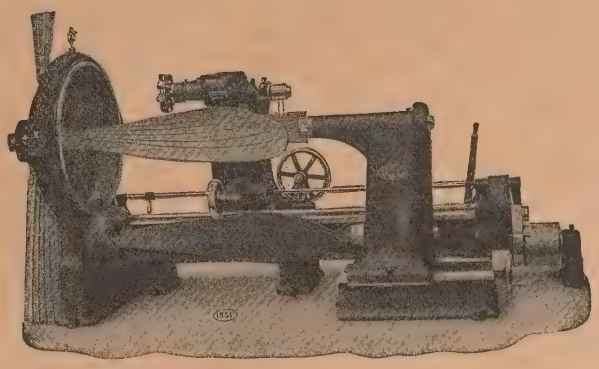
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tinue firing until the ground was reached. The observer had been wounded six times when the machine crashed in 'No Man's Land,' and Sec. Lt. McLeod, notwithstanding his own wounds, dragged him away from the burning wreckage at great personal risk from heavy machine-gun fire from the enemy's lines. This very gallant pilot was again wounded by a bomb whilst engaged in this act of rescue, but he persevered until he had placed Lt. Hammond in comparative safety before falling himself from exhaustion and loss of blood."

O'HARA WOOD.—Maj. Arthur Holroyd O'Hara Wood, R.A.F., who was killed on Oct. 4th while leading a patrol in France, was the elder son of Mr. and Mrs O'Hara Wood, East St. Kilda, Melbourne, Australia. He was 28 years of age.

RICHARDSON and NOYES.—Sec. Lt. Tom Richardson, R.A.F., and his observer, Serjt. C. H. Crispin Noyes, R.A.F., at Chingford, were killed while flying over High Beech, Essex, on Dec. 4th. Owing to engine trouble, their machine crashed to earth.

Serjt.-Obsr. Charles Henry Crispin Noyes, R.A.F., was the only child of George Crispin and Elizabeth Noyes, of Folkestone. He was 21 years of age.

SANSOM.—Sec. Lt. R. A. F. Sansom, R.A.F., who was killed in a bombing raid over Saarbrücken on May 16th, was the third son of Dr. C. Lane Sansom, C.M.G., and Mrs. Sansom, of Kuala Lumpur, F.M.S. He was 21 years of age.

SOLOMAN.—Lt. Harry M. Soloman, R.A.F., who died of influenza on Dec. 4th in hospital at Cambridge, was the youngest son of Nat Soloman and the late Mrs. Soloman, of Aldershot. He was 25 years of age.

STEEL.—On Dec. 4th, at 3, Gainsborough Gardens, N.W.3, of influenza, Marion Chalmers (May), the most dearly beloved wife of Graham Strang Steel, Capt., R.A.F., and daughter of the Rev. James Henderson, Southsea.

Marriage.

PRESTON—WELLS.—On Nov. 16th, at the Citadel Church, Cairo, Lt. Raphael Chevallier Preston, R.A.F., only son of the late Capt. John Preston, Resident Magistrate of Athlone, co. Westmeath, Ireland, and Mrs. Preston, of Aspall, Suffolk, and Kew Gardens, was married to Margaret, elder daughter of Sidney H. Wells, of Gezira, Cairo, and Conford, Liphook, Hants, Director-General of Department of Technical Education, Egypt, by the Rev. R. B. Abell, M.A., C.F.

Births.

COATES.—On Dec. 6th, at 10, Cornwall Mansions, Kensington Court, W., to Kathleen (née Rank), wife of Maj. Laurence Coates, R.A.F.—a son.

HIGSON.—On Dec. 3rd, at Uplands, Darlington, the residence of her father, the wife of Lt. Aubrey W. Higson, R.A.F., of a daughter.

LEIGH-MALLORY.—On Dec. 1st, at Upper Norwood, Doris, wife of Maj. T. Leigh-Mallory, R.A.F., of a daughter.

PLATT.—On Dec. 2nd, at Jesmond Dene, Rotherham, the wife of Lt. Maurice Platt, R.A.F., of a son.

SHOVE.—On Dec. 2nd, at 117, The Ridgway, Wimbledon Common, to Blanche and Lt.-Col. Cyril A. Shove, O.B.E., R.A.F., of a son.

STEEL.—On Dec. 1st, at 3, Gainsborough Gardens, N.W.3, to May, the wife of Graham Strang Steel, Capt., R.A.F., a son, prematurely (still-born).

* * *

Lt. J. W. Warner, R.A.F., who has been reported missing on Oct. 4th, 1918, is now reported to have been killed in action. The last news received by his squadron was that he was seen fighting three Fokker biplanes. Miss Warner will be grateful to anyone who is in a position to give her further information concerning the fate of her brother. Letters should be sent to her at Thorp Arch, Boston Spa, Yorkshire.

* * *

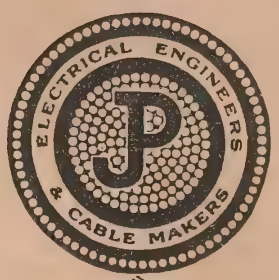
Any information as to Capt. E. Basil G Morton, R.A.F. (pilot), and Lt. Frank A. Shaw, M.C., Lancs. Fus., attd. R.A.F. (observer), last seen coming down in spin in enemy territory, within five miles of Dormans, south of the Marne, on July 16th, 1918, will be gratefully received by Capt. G. B. Strathy, Argyll House, W.1.

* * *

Any information concerning Lt. Leslie Young, of the 25th Squadron R.A.F., who has been missing since Oct. 4th (Machine D.H.4), will be gratefully received by Mrs. C. Young, 26, Mt. Ephraim Road, Streatham, S.W.16.

* * *

Sec. Lt. E. C. Toy, R.A.F., was reported missing 10 miles south of Ostend on Aug. 25th last, whilst flying machine B.6358. Any information will be gratefully received by Mr and Mrs. E. J. Toy, "Mascal," Ascot.



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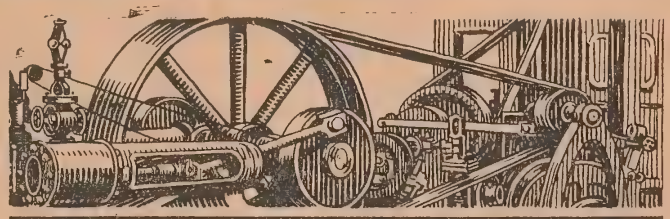
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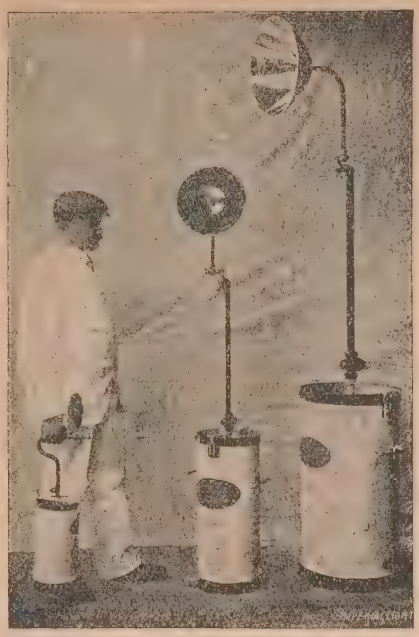
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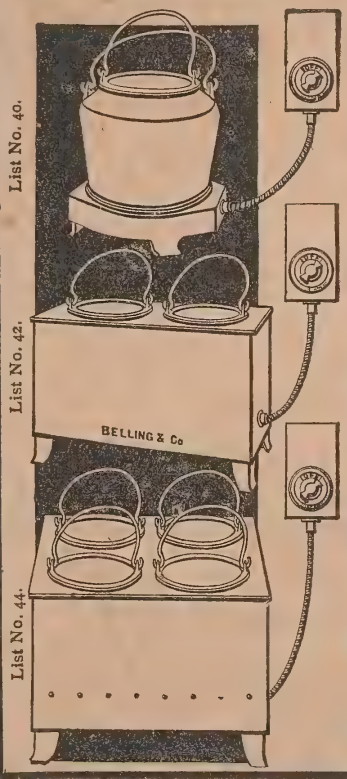
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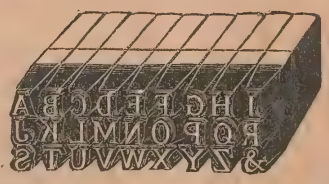
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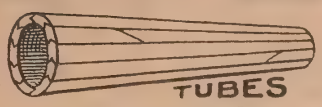
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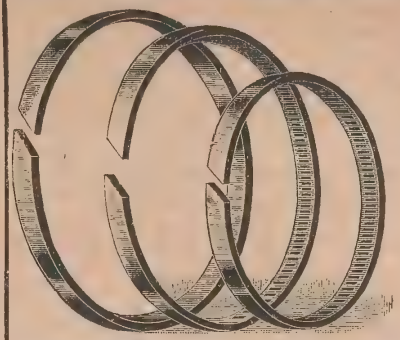
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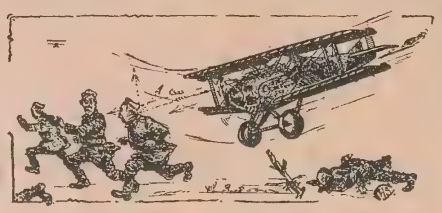
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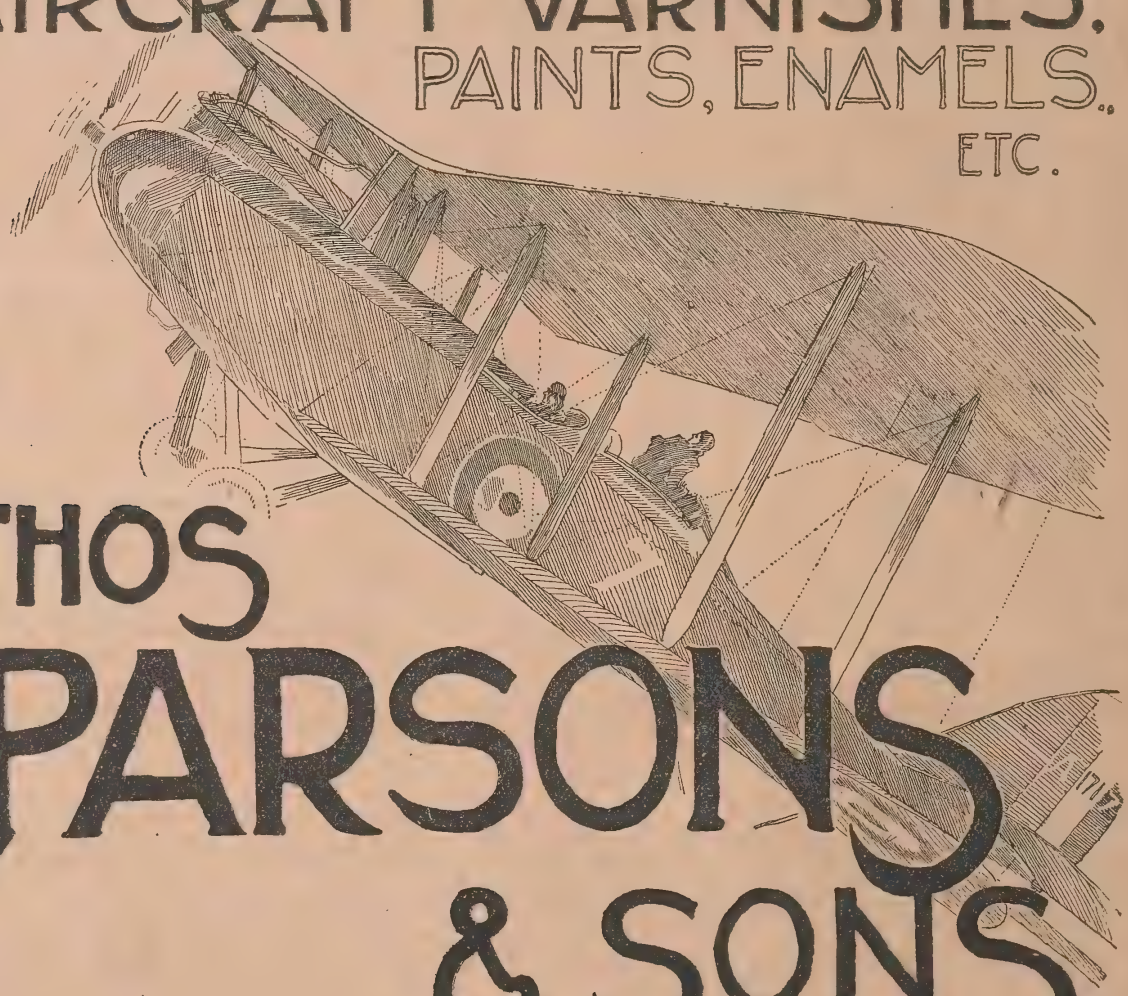
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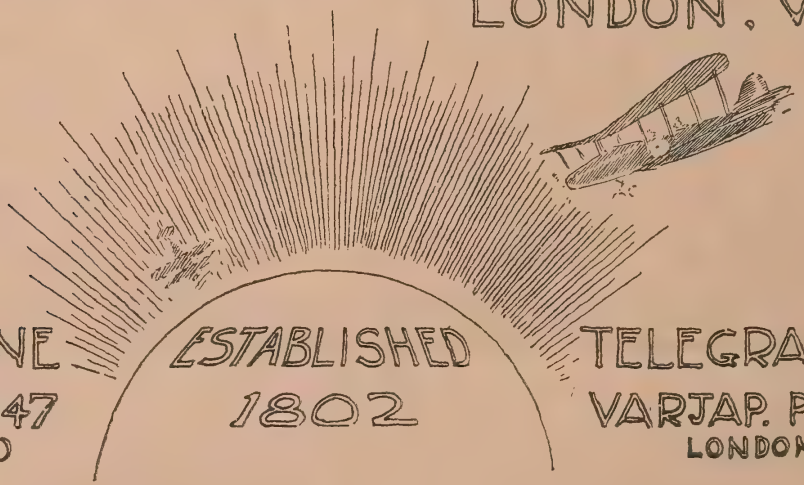
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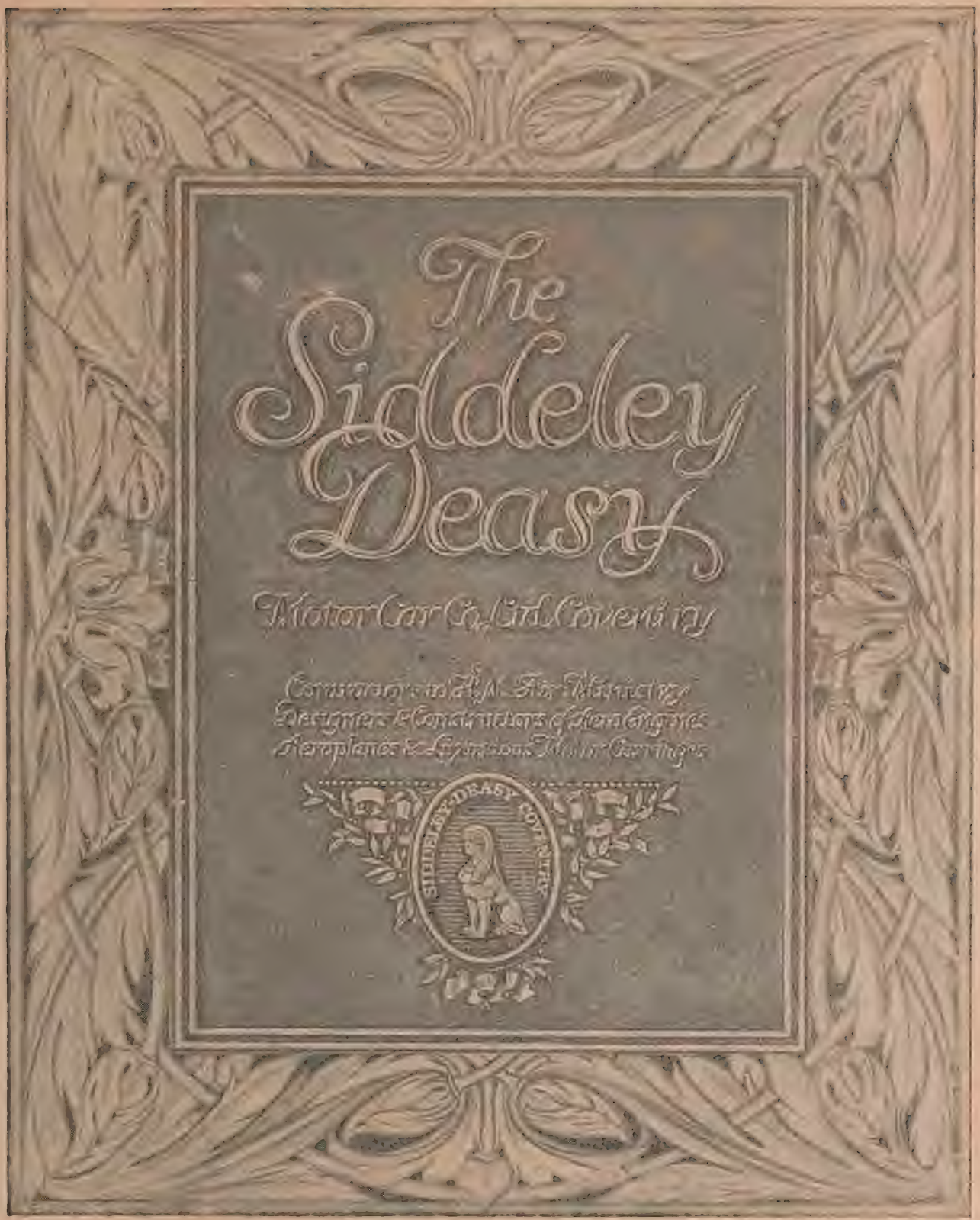
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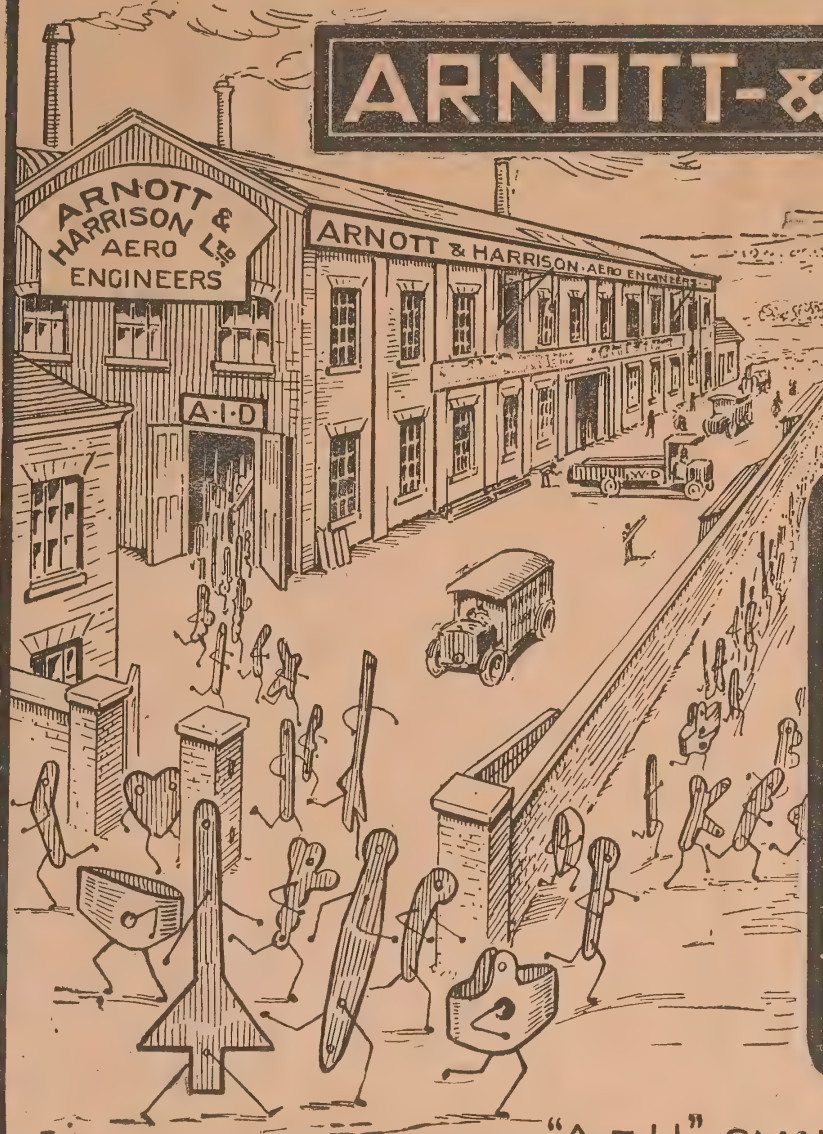
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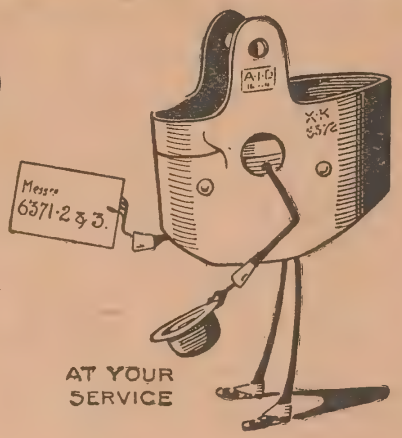
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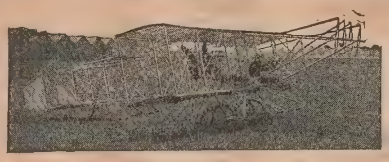


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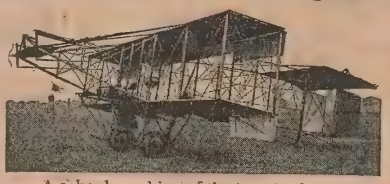
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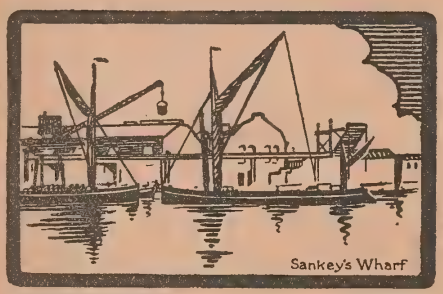
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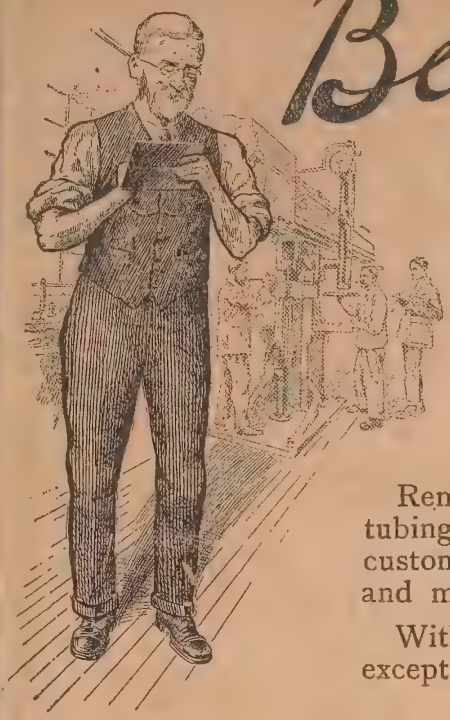
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ON CIVIL AERIAL TRANSPORT—I.

It is curious that whenever an official report of vital importance comes to be issued it should always appear at a time when it is overshadowed in the public eye by matters of less importance but of greater interest to the vulgar mind.

For example, the Report of the notorious Air Enquiry Committee of 1916 was issued with great skill just at Christmas-time when people were concerned with other affairs. And similarly the Reports of the Civil Aerial Transport Committee appear, with similar skill, just when the people of the country are foolishly concerning themselves with the catch-vote election planned by Mr. George to humbug the people into the belief that he and not Sir Douglas Haig won the war.

As a matter of fact, it will matter little enough in five or ten years' time who is or who is not elected to the national talking-shop to-day, whereas it will matter a very great deal to the future development of the British Empire what happens to Civil Aerial Transport during the next two years. For, unless British aviation is given complete freedom to develop during 1919 and 1920 on the lines thought best by the best brains in the Aircraft Industry, we shall be beaten in the competition for foreign trade by both our Allies and our enemies.

Thus, instead of British aircraft dominating the world's air traffic as British merchant ships dominate the Seven Seas, we shall find ourselves with a self-satisfied stay-at-home little trade like the British motor trade, while the world's markets are flooded with aerial Fords and cheap German aeroplanes.

The Importance of the Reports.

The study of the Reports of the Civil Aerial Transport Committee is essential to all who hope to see the British Empire holding the same position in the air that it now holds on the sea, for though, in fact, these Reports only represent the pious opinions of a few distinguished and of a vast number of peculiarly undistinguished gentlemen, they will undoubtedly be accepted as Gospel by our entirely ignorant law-makers in the future and so will form the basis of our aerial legislation. Therefore, it is of the greatest importance that all those who hope to be concerned with aeronautics in the future should study these Reports in detail, so as to realise what we are all "up against" in the next few years.*

As there are 83 solid pages of the Reports, Appendices, and Annexures—enough to fill about two issues of this paper—it is hopeless to attempt to publish them all in full; therefore one must be content to quote verbatim only the essential parts and to comment thereon, while dealing with the rest of these portentous documents by means of paraphrase or précis, or merely by reference. At the same time every effort will be made not to overlook any point which is of real importance to the development of aeronautics.

The Committee.

Naturally, the first thing to do is to place on record here, for historical purposes and for handy reference, the names of those who formed the Committee, and the terms of reference under which they worked. These are set forth in the first page of the Reports as follows:—

> This Committee was appointed on May 22nd, 1917, to consider and report to the Air Board* with regard to:—
> 1. The steps which should be taken with a view to the development and regulation after the war of aviation for civil and commercial purposes from a domestic, and imperial, and an international standpoint.
> 2. The extent to which it will be possible to utilise for the above purpose the trained personnel and the aircraft which the conclusion of Peace may leave surplus to the requirements of the Naval and Military Air Services of the United Kingdom and Overseas Dominions.

List of Members.

The following list gives the names of the members of the Committee as originally appointed, and of the Departments, etc., represented by them.

**Viscount Northcliffe, Chairman.
Major Baird, C.M.G., D.S.O., M.P., Deputy Chairman.
The Duke of Atholl, K.T., D.S.O.
Mr. A. E. Berriman, O.B.E.
Major-General W. S. Brancker, A.F.C., Air Ministry.
Mr. J. H. Balfour-Browne, K.C.
Sir M. D. Chalmers, K.C.B., Home Office.
Mr. G. B. Cockburn, O.B.E.
†The Earl of Drogheda, Foreign Office.
Mr. G. E. A. Grindle, C.M.G., Colonial Office.
Sir Laurence Guillemard, K.C.B., Board of Customs and Excise.
Mr. G. Holt-Thomas.
Mr. Claude Johnson. (Resigned March 11th, 1918).
Mr. W. Joynson-Hicks, M.P.
Mr. F. W. Lanchester. (Resigned Feb. 21st, 1918).
Sir Thomas Mackenzie, K.C.M.G., Dominion of New Zealand.
Brig.-General E. M. Maitland, D.S.O.
Major-General Sir J. W. McCay, K.C.M.G., C.B., Commonwealth of Australia.
Brig.-General Lord Montagu, C.S.I., India Office.
Mr. G. E. P. Murray, C.B., General Post Office.
Lieut.-Colonel M. O'Gorman, C.B.
‡The Hon. Sir G. H. Perley, K.C.M.G., Dominion of Canada.

[* Complete copies of the Reports may be obtained from any stationer or bookseller (with the usual delay) through the usual official channels at the price of 9d.—the amount of paper alone is almost worth the money—or for 11d., post free, from The Aeroplane & General Publishing Co., Ltd., Union Bank Chambers, Carey Street, W.C.2.—Ed.]

*At the dates on which the Reports of the Committee were presented the Air Council had replaced the Air Board.

** Viscount Northcliffe was called away on a mission to the United States after the first meeting, May 31st, 1917, and from that time down to the date on which the final Report was presented Major Baird acted as Chairman of the Committee.

†Lord Drogheda resigned on Jan. 31st, 1918, and the Hon. C. H. Tufton, C.M.G., was appointed in his place to represent the Foreign Office.

‡ Lt.-Col. E. R. Wayland represented Sir G. Perley on all the Special Committees, and, when necessary, at meetings of the Main Committee

Colonel J. C. Porte, C.M.G.
Colonel J. W. Pringle, Board of Trade.
Major-General Ruck, C.B., C.M.G.
Rt. Hon. W. P. Schreiner, C.M.G., K.C., Union of South Africa.
Sir Napier Shaw, LL.D., F.R.S., Meteorological Office.
Mr. J. D. Siddeley, C.B.E.
Mr. T. Sopwith, C.B.E.
Lord Sydenham, G.C.S.I., G.C.M.G., G.B.E. (Resigned Feb. 11th, 1918).
Brig.-General A. V. Vyvyan, D.S.O.
Mr. H. G. Wells.
Mr. H. White-Smith.
Mr. W. Tyson Wilson, M.P. (Resigned June 16th, 1917).

The following, who had been co-opted as members of the Special Committees, were appointed members of the Main Committee on Dec. 12th, 1917:—

Mr. Butler Aspinall, K.C.
Mr. Leonard Bairstow, C.B.E., F.R.S.
Maj. the Right Hon. H. T. Baker, M.P.
Capt. F. S. Barnwell, O.B.E.
Mr. R. O. Cary, O.B.E.
Mr. A. E. L. Chorlton, C.B.E.
Mr. W. Barnard Faraday.
Sir R. T. Glazebrook, C.B., F.R.S.
Brig.-Gen. R. M. Groves, C.B., D.S.O., A.F.C.
Mr. Nevile Gwynne.
Sir Frank Heath, K.C.B.
Col. H. G. Lyons, F.R.S.
Mr. Arthur Morley.
Prof. J. E. Petavel, F.R.S.
Mr. Frank Pick.
Maj. E. Elvey Robb.
Col. the Master of Sempill.
Maj. T. Vincent Smith, M.C.
Maj. G. I. Taylor.
Mr. A. E. Turner.
Mr. H. J. Wilson.

The following were also appointed members of the Main Committee:—

Dec. 1st, 1917: The Right Hon. Lord Morris, K.C.M.G. (representing Newfoundland).
March 9th, 1918: Col. P. N. Buckley (additional representative of the Commonwealth of Australia).
March 13th, 1918: *Lt.-Col. D. H. Hyde Thomson.
,, ,, Lt.-Col. J. T. C. Moore-Brabazon, M.C.
,, ,, Lt.-Col. W. Lockwood Marsh.
Feb. 5th, 1918: The Hon. C. H. Tufton, C.M.G. (See note † above.)

Secretariat.

Mr. D. O. Malcolm, Secretary.
Capt. E. H. Tindal Atkinson, Assistant Secretary
Mr. H. Harper, Assistant Secretary (Technical)

Many of the names are well known to all concerned with aeronautics, some of them are well chosen, others will be seen with surprise, and others, again, with amusement, giving one to ask what they are doing in this galley.

Who's Who.

It seems peculiar that in many cases the particular connection between the name of a member and aeronautics has been omitted, and for the benefit of the uninitiated it seems well to supply the omission.

The Duke of Atholl, formerly Lord Tullibardine, is President of the Royal Aero Club. Mr. Berriman, who was then employed by the Daimler Co., may presumably be taken as representing the motor trade's interest in aviation. Mr. Balfour Browne was a member of the 1916 Air Enquiry Committee. Mr. G. B. Cockburn, one of the pioneers of aviation, was then one of the chiefs of the Aeronautical Inspection Department. Mr. Holt Thomas, of the Aircraft Manufacturing Co., Ltd., is one of the leading spirits of the Society of British Aircraft Constructors. Mr. Claude Johnson, of Rolls-Royce, Ltd., —who later went to America—represented British aero-engines at their best. Mr. Joynson Hicks was, and is, chairman of the Parliamentary Air Committee. Mr. F. W. Lanchester presumably represented himself and his theories.

Gen. E. M. Maitland represented airship development, being the officer who is chiefly responsible for our vast strides in this branch of aeronautics. Lieut.-Col. O'Gorman, also of the Aircraft Manufacturing Co., Ltd., had previously in his Wilbur Wright Lecture demonstrated his foresight as regards post-war flying, and was thus justly included. Col. J. C. Porte is the pioneer of the big multi-seated flying-boat.

Gen. Ruck was, and is, chairman of the Aeronautical Society (now Royal). Mr. J. D. Siddeley, of the Siddeley-Deasy Co., presumably represented also the motor trade interest in aeronautics. Mr. T. O. M. Sopwith is another of the moving spirits of the Aircraft Industry.

Lord Sydenham is a soldier and a statesman who has long been keenly interested in aeronautics. Mr. H. G. Wells presumably represented pure Romance. Mr. H. White-Smith is chairman of the Society of British Aircraft Constructors. Mr. Tyson Wilson is believed to have represented Labour—and seems to have lost interest in one of the greatest fields for labour in the future.

Additions to the Special Committees.

Of the later additions, Mr. Aspinall is unknown in connection with aeronautics, but presumably was called in to advise on International Law; Mr. Bairstow is a pillar of strength at the National Physical Laboratory; Maj. Baker is another unknown; Capt. Barnwell is an experienced and skilful pilot, and the designer of the famous Bristol aeroplanes; Mr. Chorlton is an engine expert; Mr. Faraday is secretary of the Royal Aeronautical Society; Sir Richard Glazebrook is an expert mathematician and chief of the N.P.L.

Gen. Groves (Commander, R.N.) was one of the chiefs of the R.N.A.S. before the R.A.F. happened; Mr. Gwynne is one of our leading aero-engine manufacturers; Sir Frank Heath, Col. Lyons, and Mr. Morley are not famous among practical aviators; Professor Petavel is an earnest seeker after theoretical truth who had the courage to qualify for his certificate as an aviator in the early days; Mr. Frank Pick is another unknown to aeronautical fame; Maj. Robb, it is believed, is concerned with the Hotel Bolo or one of its annexes.

Col. Forbes-Sempill is a pilot of considerable experience and now holds a high position in the Technical Department of the Aircraft Production Dept., Ministry of Munitions; Maj. Smith and Maj. Taylor are still unknown to fame; Mr. A. E. Turner was Director of Contracts under the old Air Board, was formerly in charge of aircraft contracts at the War Office, and is now with the Aircraft Manufacturing Co., Ltd.; Mr. H. J. Wilson has still to become famous.

Main Committee Additions.

Of the additions to the Main Committee, Col. Hyde-Thomson—whose death was an irremediable loss to aeronautics in general as well as to the R.A.F.—was chief of the R.N.A.S. Wireless Department; Col. Moore-Brabazon, another pioneer of aviation, was chief of the R.F.C. Photographic Department. Col. Marsh is not known among aeronautical people, but presumably has some special qualifications of his own.

The Secretariat.

Neither Mr. Malcolm nor Mr. Tindal Atkinson has had, so far as one knows, any previous concern with aeronautics, and for that reason, approaching the subject without prejudice, were probably the better suited to their work. Mr. Harry Harper's name will probably be known to many readers as the joint author with Mr. Grahame-White of a number of large and nicely printed

* Col. Hyde-Thomson was killed in a flying accident on May 21st, 1918

books with aeronautical titles, singularly free from technicalities, and presumably intended for the education of the young, or of those newly interested in flying. Mr. Harper was concerned with aviation in its early days when he reported the first flying meetings in this country for the "Daily Mail," and assisted in working Lord Northcliffe's various aero-journalistic "stunts." But his qualifications to be set down as "Assistant Secretary (Technical)" are not obtrusively evident. One gathers that when the Committee was new, Mr. Harper was "Aeronautical Secretary"—whatever that might be—to Lord Northcliffe, but his name did not appear in the Secretariat as originally announced.

THE SPECIAL COMMITTEES.

In order to obtain a right understanding of the Committee's operations one has to know that the Main Committee, as originally appointed, found itself after a meeting or two in such a tangle that it appointed five Special Committees which dealt broadly with the following headings :—

No. 1. Questions of Law and Policy.

No. 2. Technical and practical questions as to the possibilities of performance of aircraft and as to the requirements of aerial services.

No. 3. Business questions relating to the position of the aircraft manufacturing industry after the war, the probabilities of the establishment of aerial transport services and the steps which would be necessary for the maintenance of this industry and for the development of these services.

No. 4. Questions of labour arising in the aircraft manufacturing industry and in aerial transport services.

No. 5. Problems of scientific research and the special education of expert designers, engineers, and pilots.

These committees were composed of specialists, or of what the daily news-sheets prefer to call "experts." Hence the number of names added at later dates as seen in the lists printed hereinbefore.

Apparently the first of these Special Committees to achieve results was No. 1, which issued an Interim Report to the Air Council on February 7th, 1918. This report is worth reproducing in full, and reads as follows :—

INTERIM REPORT OF THE COMMITTEE AS TO THE INTERNATIONAL ASPECTS OF CIVIL AERIAL TRANSPORT.

TO THE AIR COUNCIL :—

1. By our terms of reference we were invited *inter alia* to consider the development and regulation of civil aerial transport from an international standpoint. We have been informed by the Foreign Office that in the opinion of that Department, if it is desired to set on foot negotiations for the conclusion of an International Aeronautical Convention, no time should be lost in approaching certain Allied and friendly Governments. We therefore think it desirable to submit an Interim Report on this branch of our subject at once.

2. At the outset of our inquiry we found it necessary to divide the subjects covered by our terms of reference under various heads, and to refer these different heads to special committees for detailed investigation. One of the branches of inquiry so referred comprised international and legal problems, and Special Committee No. 1, who have dealt with these problems, have presented a report* which, as far as it concerns international questions, has generally been approved by us. We think it will be found convenient that we should enclose herewith this Report in its entirety, and that we should draw attention to certain salient points which seem to us to call for emphasis or comment. We shall deal in a further report with the latter part of the report of Special Committee No. 1, which is concerned with questions of municipal legislation.

3. It will be observed that the Special Committee, in considering the first part of their subject, have taken as a basis the Draft International Convention drafted by the Conference held at Paris in 1910 (Appendix A to their report). This Conference was unable to complete a draft convention for ratification by the Contracting Powers, mainly owing to a conflict of opinion between the British and German delegations as to the right of each State to the sovereignty (or to the exercise of control and jurisdiction, whichever term be preferred) in the air space over its territories. In our opinion this question of sovereignty is one upon which agreement between the Contracting Powers is vital in the future interests of civil aerial transport.

* See Appendix 1.



Three-quarter front view and undercarriage of a 1917 type Paul Schmitt (French) Biplane.

4. It is a question on which it is possible to hold different opinions: indeed, some divergence of view with regard to it has manifested itself on our Committee. It must, of course, be admitted that a State must assert some rights of sovereignty in the air space over its territories, since otherwise no legal control could be exercised over aircraft in flight at however low an altitude, but it is possible to take the view either (a) the State Sovereignty should be asserted *usque ad cœlum*, or (b) that State Sovereignty should be asserted only up to some prescribed level of altitude, above which the flight of aircraft would still be practicable, and that above that altitude the air should be free to all, just as the high seas outside the limits of territorial waters are free to all.

5. From the purely business point of view of the prospects of civil aerial transport in times of peace, the latter view has much to recommend it. The commercial advantages of air traffic are to be expected mainly from rapid uninterrupted flights over long distances, and these advantages would be clearly best secured if aircraft above a certain altitude were allowed to fly freely in any direction without let or hindrance imposed upon them by the municipal legislation of the States over whose territories they might pass.

* * * * * * *

6. The argument, however, for the doctrine of State Sovereignty in the air space *usque ad cœlum* is in the main a military one. Military considerations dictated the opposition of the British delegates to the proposals pressed by the German representatives at the Conference in Paris in 1910, and we understand that the views of the Foreign Office and of the naval and military advisers of the Crown are unchanged. To give to foreign aircraft, as a matter of acknowledged international law, the right to fly at will over the territory of the State would be to give them undesirable opportunities for espionage, and generally to limit "the elementary right of a State to take each and every measure which it considers necessary for self-preservation."* In time of war, moreover, the doctrine of the "freedom of the air" above a certain altitude would give rise to most embarrassing questions for neutral States. They would actually be exposed to the risk of having aerial battles fought over their territory without being able to claim that their neutrality had been infringed. The case of the upper air presents no true analogy to the case of the high seas outside the limits of territorial waters.

7. The experience of the present war has merely served to increase the force of these considerations, and we agree with the Special Committee that the doctrine of State Sovereignty in the air space *usque ad cœlum*, on which this country acted before the war, and on which, along with neutral countries, it still acts, is sound, and should be adopted as the basis alike of international agreement and of municipal legislation.

8. As far as the doctrine of sovereignty may be applicable to territorial waters, we agree with the conclusion of the Special Committee that the air space over such waters must be considered from the same point of view as the air space over the land of the State. We desire, however, to point out that the questions of sovereignty over and of any extension of the limits of territorial waters are primarily the concern of the Admiralty, and that military rather than civil considerations must be regarded as of major importance in this connection.

* * * * * * *

10. We approve the detailed conclusions of the Special Committee set out in Appendix A to their report. The technical regulations contained in Annex C of the Draft International Convention (see Appendix A) were referred to Special Committee No. 2 of our Committee, and we further approve their detailed recommendations. Recent developments in the science and practice of aeronautics have rendered necessary some amendments of regulations agreed to in 1910, more particularly since such regulations were at that date considered from the aspect of the use of airships rather than of aeroplanes.

11. In paragraph 10 (i) of Part I of their Report the Special Committee have touched upon an important question which was not considered by the Conference held in Paris in 1910. We think that the possibility of damage done by foreign aircraft visiting this country is a matter for careful consideration when it is remembered that, unless an aircraft is itself damaged, the owner of it is in a peculiarly advantageous position as regards escape from the legal consequences of his act. We agree with the Special Committee that, if some system of insurance could be mutually arranged between the Contracting Powers, or at least between H.M.G. and the States whose aircraft are most likely to visit this country and over whose territory our own aircraft are most likely to fly, such an arrangement would be of distinct advantage to civil aerial transport.

12. Having regard to paragraph 10 (ii) of the Report of Special Committee No. 1, we hold a strong view that some international agreement which will permit of the utilisation of aerial routes immediately after the war is of urgent importance for the purpose of encouraging civil aerial transport, and that therefore early steps should be taken to enter into the necessary negotiations.

13. * * * * * *

For the Civil Aerial Transport Committee.
(Signed) John Baird,
(Acting Chairman),
Feb. 7th, 1918.

(Signed) D. O. Malcolm (Secretary).

Here follows an Appendix which is not printed in the Report as issued.

* Foreign Office memorandum enclosed in dispatch to H.M. representatives abroad of July 29th, 1910.

In a preliminary note the Committee states that, "owing to the fact that much of the information upon which the Reports both of the Committee and of its Special Committees were based was confidential or secret"—one finds it hard to differentiate—"it has been found impossible to present the Reports to the public in their original and complete form."

Where the omissions occur they are shown by a row of dots, and naturally one feels intrigued to know what has been omitted. As, however, our whole official policy throughout the war has consisted in hugging to our bosoms secrets known to everybody but ourselves, it does not seem likely that anything of real importance has been omitted, except perhaps a few remarks on international safeguards, which might possibly upset some of our gallant Allies if they were as foolishly touchy about the truth being told as we are ourselves as a nation.

Appendix 1, to which reference is made, is an immense affair consisting of—Part I, International Law, and Part II, Municipal Control and Legislation, together with three minor Appendices of its own—A, The Draft International Convention of 1910, with comments; B, The Aerial Navigation Bill of 1910; and C, Recommendations as to drafting amendments to the Aerial Navigation Bill. One will endeavour to deal with these matters in detail at a later date, either here or in a series of special articles written by someone who is better qualified to deal with matters of International Law and our own internal legislation.

Plain Sense.

Meantime the Interim Report as it stands should give food for thought. The conclusions of No. 1 Committee seem eminently sensible, which is only what one would expect with Lord Sydenham as chairman. Though this Interim Report of the Main Committee is signed by Major Baird as Acting Chairman, it does but agree with the Report of No. 1 Committee, and so cannot very well have been affected by him.

The doctrine that each State owns its own air is thoroughly sound. It will doubtless become a *casus belli* in the future, but that will be all to our advantage so long as we retain that Command of the Air which has been so gallantly won by the R.F.C., plus certain R.N.A.S. squadrons, in France.

One can see quite easily why the German delegates were opposed to it in 1910. "Freedom of the Air" was of as great an advantage to them in that year, when their Zeppelins were already doing cruises of 500 or 600 miles as was our insane system of "free trade" to the Germans who dumped their surplus goods on us before the war. The best aeroplanes then could barely cover 100 miles at a height of a few hundred feet, whereas Zeppelins could cruise all over neighbouring countries and take photographs or verify military maps.

Some readers will recall the "scare-ship" agitation of 1912, which originated in this office on the strength of private official information. The pro-German, pro-Asquith newspapers jeered at us, but it made the people think seriously about enemy aircraft for the first time in their lives. That was the beginning of the end for the "Freedom of the Air."

For the rest one commends the Interim Report to the thoughtful reader, and one will return next week to further phases of Civil Aerial Transport.—C. G. G.

. The .

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THE LATE MAJOR H. F. WOOD.

Those concerned with aeronautics mourn the death of yet another of the pioneers of British aviation. On December 13th the following brief notice appeared in the daily Press :—

> Wood.—On the 11th inst., at a nursing home, Herbert Frederick, Major 9th Lancers and R.A.F., only son of Lieut.-Colonel D. E. Wood, C.B., of Kibworth, Leicester, and husband of Ethel M. Wood (Sec. L.W.P.C.), of 4, Park Village East, N.W.1.

Major Wood died on the night of the 11th of meningitis, produced by an affection of the throat following influenza. With his customary energy he refused to take the necessary rest after his attack of influenza, and consequently complications ensued which caused his death.

Herbert Frederick Wood was born at Rawal Pindi on February 12th, 1883, and in due course joined the 9th Lancers. He was a fine horseman, and won a high reputation in India as a polo-player. Being a keen all-round sportsman, it was natural that flying should appeal to him as a sport. Moreover, being essentially a soldier, the military importance of aviation in the future at once became evident to him, despite the limitations of the early aeroplanes.



THE LATE MAJOR H. F. WOOD.

It followed as a natural result that as soon as opportunity offered he should learn to fly, and he passed his tests for the Aero Club Certificate on a Bristol biplane at Brooklands. His certificate was No. 37, and was dated November 29th, 1910, so that on time alone he had good claim to be classed among the pioneers of British aviation. As a pilot he was, in his day, quite in the first class, for he had the most perfect hands and judgment of pace and distance, so that his flying was notable for its neatness and finish.

In point of fact, however, Herbert Wood's place as a pioneer is determined by far more than mere time and personal skill as a pilot. In 1911 the great Vickers Company decided to start an aviation department, whether because of the persuasiveness of Captain Wood (as he then was) or not one cannot say, but, in any event, he was placed in charge of that department, and proceeded to embark on a series of experiments which were of very high value to the development of British aviation.

At that period hardly anybody concerned with aeroplanes had any money, and if progress was to be made it was essential that money should be forthcoming for experimental work which would prove or disprove the numerous theories about aeroplane design which were then current. The Vickers Co., thanks to the foresight of Herbert Wood, and under his direction, built experimental machine after experimental machine, without any immediate prospect of profit, and by demonstrating in practice the impossibility of some ideas and the correctness of others, not only acquired knowledge for the firm's own good, but allowed that knowledge to become common property for the good of the infant Aircraft Industry in general. Which was a marked contrast to the conduct of sundry contemporary Government establishments which were supposed to exist for, as well as by, the Nation's benefit.

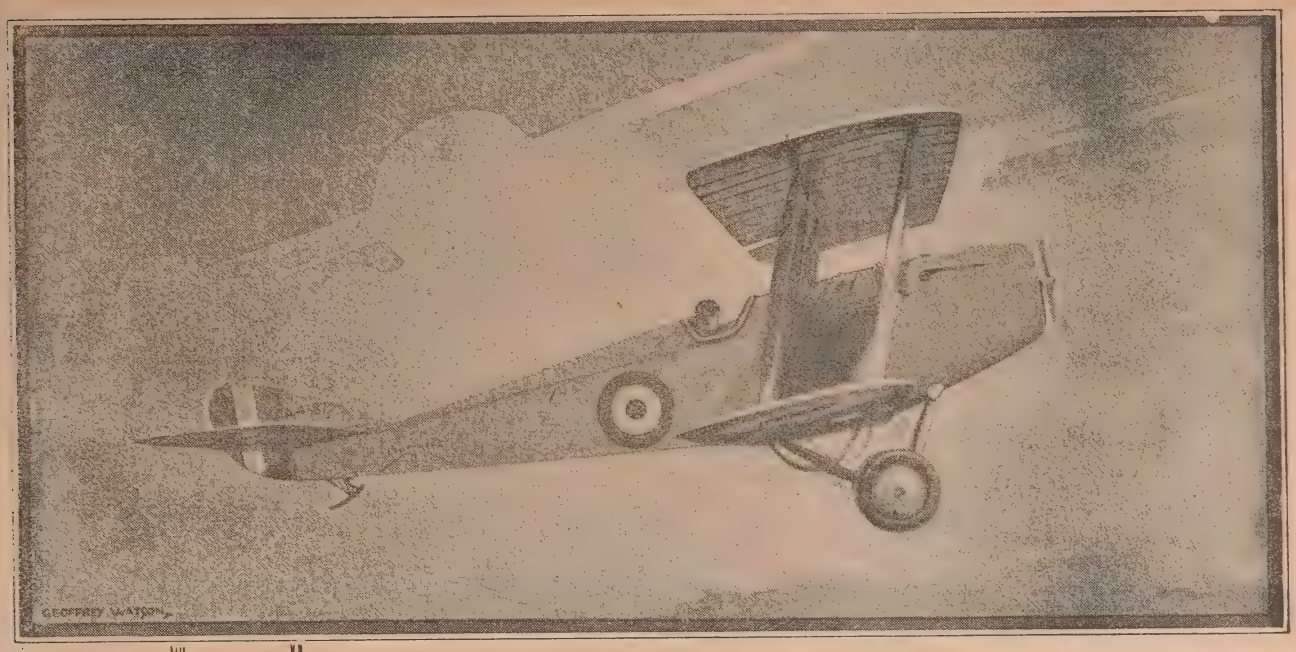
Captain Wood was one of the first people in this country to appreciate the fact that ultimately aeroplanes must be constructed of metal, and many interesting experiments were tried in this direction, beginning with modifications of a French R.E.P. monoplane, and progressing through various machines of the firm's own design. One particularly good example was the Military Trials machine of 1912, which, but for a defective engine, would have put up a very good performance.

Another example of Captain Wood's foresight was his belief in the stationary radial air-cooled engine, a type which is only now approaching its proper position in the scheme of things. Beginning with the R.E.P., and progressing through the Viale, the Hart, and others, the firm must have spent many thousands of pounds on experiments along these lines, all of great use and all of great expense. And in the end these experiments must result in the production of the engine which is wanted—namely, an air-cooled radial at 1 lb. per h.p. or less.

Perhaps the greatest success to the credit of Herbert Wood, for which success he gave most of the *kudos* to the late Harold Barnwell, was the production before the war of the Vickers fighter, commonly known as the "gun 'bus," which was the first machine to carry a machine-gun satisfactorily. During 1915, when the R.F.C. in the Field had been let down, as usual, by their technical experts at home, the old Vickers gun 'bus practically saved the situation, and taught the enemy that a heavy-looking pusher biplane could not be attacked with impunity, and could itself attack with considerable effect.

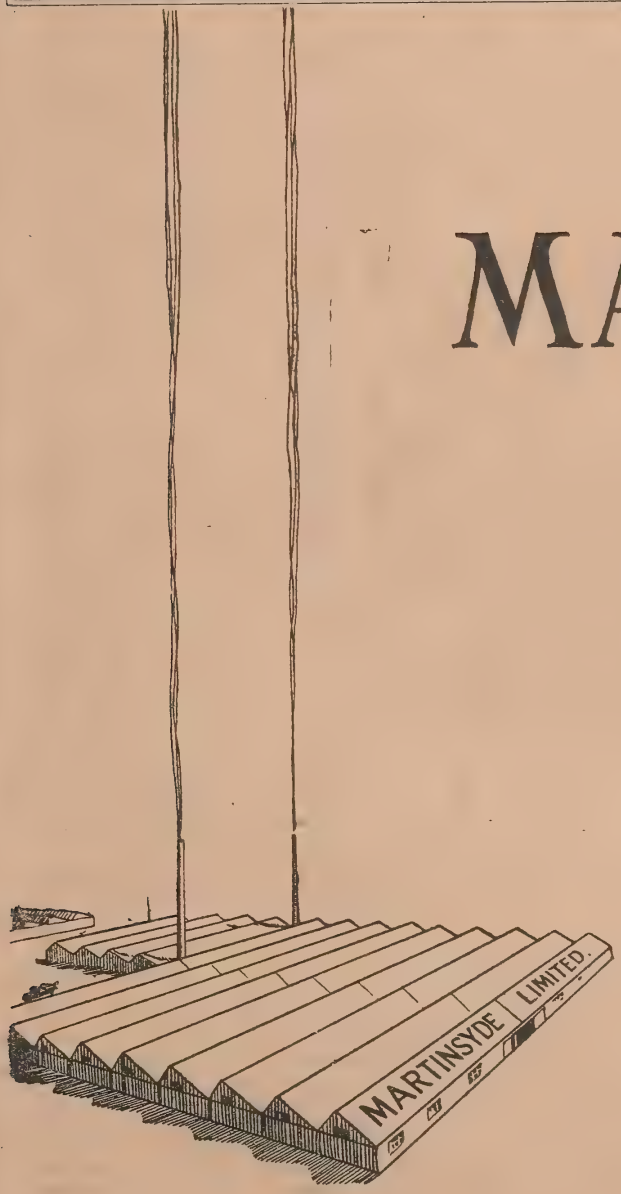
Incidentally, the success of the gun 'bus was largely due to the Monosoupape Gnôme engine, the lightest engine in the world at the time. And here, again, Captain Wood's foresight was in evidence, for, failing the stationary radial engine which he desired, he recognised the usefulness of the "Mono" and secured a big supply before others came to believe in the engine, so that he was thus able to produce the gun 'bus in quantities.

Despite all the difficulties attendant on quantity-production in workshops which were intended for goods of a different class, Captain Wood's indomitable energy succeeded in getting output. Also he built the Weybridge works, where, under the control of two other pioneers of aviation, Messrs. Muller and Knight, the output is, one believes, a record for the number of hands employed. Which is the best evidence of his ability to recognise a good man.





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KINDLY MENTION "THE AEROPLANE" WHEN CORRESPONDING WITH ADVERTISERS.

During the war the firm produced many interesting experimental machines under Major Wood's direction—he was promoted to major in 1915. Among them were certainly the two fastest single-seaters—one a tractor and the other a pusher—of their day, and recently a bombing machine with a very high performance has been turned out. For various reasons none of these were put into production during the war, but the fact remains that they were of types which would have been of great value on active service—possibly subject to detail modifications—and so they, like so many other of the firm's activities, prove that Herbert Wood always thought in the right direction, and always regarded aeroplanes from the true soldier's point of view.

In his early days in the Army, Herbert Wood fought in the South African War. On the outbreak of this war, being then on the Reserve of Officers, he joined his old regiment and fought with them through the Retreat from Mons and the battles of the Marne and Aisne. During the Retreat he was in the thick of that gallant but futile charge of de Lisle's cavalry at Landrecies, when his squadron was badly cut up. He only returned from active service at the urgent request of the directors of Vickers, Ltd., who had persuaded the War Office to second him for special duty as a producer of war material.

Like all men of strong character, Herbert Wood made many enemies, and also many friends. The true test of a man's worth is the loyalty of his friends, and of Herbert Wood one may say that none of his friends ever went back on him.

Perhaps he might have been even a greater success in business than he was if he could have overcome his natural kindness of heart and could have induced himself to be more ruthless to those who served under him. Many a man has been kept on at Vickers, Ltd., and tried in one job after another when a sterner master would have got rid of him altogether. Yet one can but set down this trait in his character as being altogether to his credit. It is possible to buy success in this world at too high a price.

As an example of his foresight one may mention that he was one of the founders of the Society of British Aircraft Constructors. He was Honorary Treasurer of that Society, and to the last was one of its moving spirits.

Herbert Wood was outwardly the typical cavalry officer of the Old Army, always smartly turned out and correct to the last button. Few knew more about soldiering than he, and his constant endeavour in his work was to do his best for the Army. He had an astoundingly active mind, and was able to grasp a new idea and appreciate its military or aeronautical value with remarkable quickness.

That same quickness of mind endowed him with a ready wit and a delicate sense of humour, both creative and appreciative. His taste in literature and art were on a level with his other mental qualities. And so it would be difficult to find a more delightful companion than was Herbert Wood when free from the cares of his great responsibilities.

Even his enemies admit his energy, his mental activity, and his earnestness in whatever task occupied him at the moment. His friends mourn the loss of one whose place in the scheme of things can never be adequately filled.—C. G. G.

AIRSHIP RAIDS OVER GREAT BRITAIN.

Since the commencement of hostilities the South, South-East, North-East, and North-West Coasts of England, the London district, the Midlands, and the South of Scotland, have been attacked 56 times by hostile airships. There was only one case where British Naval aeroplanes were able to prevent the attack by meeting the raiding aircraft at sea.

Captain Peter Strasser was in supreme command of the Naval airship squadrons. He was a regular officer in the German Navy, which he entered as a cadet in 1894, and after a brilliant career as a gunnery and navigating officer he became chief of the German airship service in 1913, a post he held until his death. He rendered good services to his country in promoting and improving the construction of Zeppelin and Schütte-Lanz airships, but Captain von Pustau, the naval correspondent of the "Taglische Rundschau," stated that Captain Strasser's greatest service consisted in the organisation of raids upon England.

Captain Strasser prevailed over objections of many kinds, and succeeded in obtaining the necessary permission for the first attack upon England, which was carried out during the night of Jan. 19th-20th, 1915, by several naval airships under his command. About 80 bombs were dropped between Yarmouth and King's Lynn. This was the forerunner of many such attacks, and it was not until September, 1916, that the British began to gain the ascendancy over raiding airships.

It was during the night of Sept. 2nd-3rd, 1916, that a Schütte-Lanz airship was shot down in flames over Cuffley by Lieut. W. L. Robinson, R.F.C. (later promoted to Captain and awarded the V.C., and later still shot down in France and made a prisoner), who used a newly-invented incendiary bullet, especially made for use against airships. This airship was in charge of an officer named William Schramm.

Shortly after this, a new type of airship was used for raiding England. It was driven by six engines—Maybach—and had a capacity of 2,000,000 cubic feet. One of this type (the L31, commanded by an able officer of proved courage, Commander Mathy) was brought down at Potters Bar on the night of Oct. 2nd-3rd, 1916. The destruction of this airship, which was witnessed by sister-ships, greatly affected the moral of the crews.

The high standard of personnel was maintained throughout, but the previous enthusiasm of the men for their work gradually deteriorated with the increased altitudes at which they were compelled to fly in order to avoid the British anti-aircraft guns and also to have some chance of escaping the home-defence aeroplanes.

One of the most interesting aerial combats in which airships were attacked by aeroplanes was the one in which Commander Strasser lost his life over the North Sea. The hostile airships appeared off the English coast just before dark on Aug. 5th, 1918, evidently not realising the nearness of England, for they came in quite close and then turned back. A number of British machines, including a number of D.H.9s, went in pursuit, and 40 miles out at sea they brought the enemy to combat.

At least four of our machines were engaged in the fight. The engine of one machine was hit, which fell into the sea. A second, after a long chase, experienced machine-gun trouble and returned to its base. The remaining two machines each returned and reported having shot down an airship. It was, however, subsequently discovered that each pilot, unknown to the other, had attacked the airship—in charge of Captain Strasser—from opposite sides at the same time. Both had got their shots home, and had watched the airship fall into the sea. Motor-boats which hurried to where the airship fell found nothing but oil and soot floating on the surface.

Although Captain Strasser was promoted to a high rank he often accompanied the airships on their journeys to England.

As part of the Armistice conditions, the German airships are being demobilised, but until such time as their envelopes can be filled with a non-inflammable gas, with the same lifting power as hydrogen, the risk of fire would, to a great extent, prevent their use on a commercial basis. However, it is understood that such a gas is being experimented, and may possibly be used in the near future. But whether Germany will be in possession of the airships is a question which has yet to be settled.—R. M.

ITALIAN NOTES.

According to a report from Rome, dated Dec. 10th, two airships, O5 and O6, are reported to have disappeared while navigating from Ciampino, Rome's aviation ground, to Taranto. Both airships met with adverse weather.

The O5 was last seen over Sanvito di Puglia aviation ground, and part of the crew jumped off. Major Berardi, the navigating officer, and a mechanic remained on board in the hope of saving the airship, and both disappeared.

At the end of the operations which led up to the Armistice the Austrians were using parachutes which removed them from their seats—or, at any rate, from the cushions on the same.

The Italian chaser-squadrons were making excellent use of certain little gelatine lozenges, in neat little boxes too. Considering their small weight they were voted most effective.

Things were so curious at last that it is on record that Capt. Ruffo di Calabria, who went out to discover his C.O., Col. Piccio, who had landed in debatable land, carried a bicycle on his machine with which he scoured country lanes the while the aeroplane waited behind a haystack!—T. S. H.

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THE NEXT AERO SHOW: A SUGGESTION.

There is already talk about an Aero Show in 1919, and there are various difficulties in connection therewith. The Society of Motor Manufacturers and Traders practically owns Olympia for show purposes, and the members of the S.M.M. & T.—among whom are many of the best-known British and French and Italian and American aero-engine makers—are under bond not to show themselves, nor to permit their products to be shown, at any exhibition which is not approved by their Society. On the other hand, the S.M.M. & T. has practically no aeroplane designing firms among its members.

The Society of British Aircraft Constructors, which includes all the firms which have designed aeroplanes of note, is determined to hold its own shows and not to be treated as a mere appendage to the motor trade. On the other hand, it is short of engine-makers who are not members of the S.M.M. & T.

So one sees prospects of the S.M.M. & T. holding one show with a lot of engines and a few foreign aeroplanes and the S.B.A.C. holding another with a lot of aeroplanes either without engines or with foreign engines, bar one or two British makes.

There exists, however, a society of which one hears very little, called, one believes, the British Motor Manufacturers' Association. This appears to include the purely British engine firms among the S.M.M. & T. It seems possible, therefore, that this association might be strong enough to defy the rest of the S.M.M. & T., in the best interests of British manufacturers, and join forces with the S.B.A.C. in making a big success of a purely British Aero Show.

As to the locality of the Show. Olympia, or any other building, is much too small to house the big Handley Pages, de Havillands, Bristols, Faireys, Portes, Tarrants, Avros, and other multiple-engined multi-seated machines of the near future. Machines forty yards in span and twenty or thirty in length take up a good deal of space. Therefore it is said that the show must be held in a series of huge marquees, or else in temporary buildings of the nature of the White City.

Hendon has been mentioned as a possible place for such a show. Personally one is convinced that it is an absurd location. It is possible to induce 60,000 people to go to Hendon once in a while to see a big international race, but people will not face the discomforts and delays of such a journey half a dozen or a dozen times in a week to see a show as it ought to be seen.

The Crystal Palace would house the whole show comfortably, if it could be hired for the purpose, and besides being much more accessible than Hendon it would be far better from the point of view of comfort when once one arrived there. But by far the best place for the show would be Hyde Park.

It is well to recall that in 1854—or was it 1864?—a great International Industrial Exhibition was held in Hyde Park, in a building which ultimately became the Crystal Palace. In the interests of British Aeronautics it should be quite possible for the Air Ministry to obtain the necessary Royal permission for the S.B.A.C. to erect temporary buildings in Hyde Park and hold a show there for a month. One presents the idea to the Aircraft Industry.—C. G. G.

THE SPECIAL SERVICE ISSUES OF "THE AEROPLANE."

It is proposed to publish the usual Special Service issues of The Aeroplane as usual as the first issues of the New Year. The dates of these issues will be January 8th and January 15th.

The first will be a special R.N.A.S. and R.F.C. Issue. This will contain the Honours List of the R.N.A.S. and R.F.C. for 1918: a condensed aeronautical history of the first six months of 1918: special articles on the R.N.A.S. and R.F.C.: and a double-page Supplement showing the Allies' war machines of 1918, drawn by Geoffrey Watson.

The second will be the Special R.A.F. Issue. This will contain the Honours List of the R.A.F.: the aeronautical history of the second six months of 1918: special articles on the R.A.F.: and a double-page drawing by Geoffrey Watson, showing the enemy aircraft of 1918.

The price of these Special Issues will be as usual, sixpence each, and, as the supply is strictly limited, orders for them should be placed in advance with newsagents, or they should be ordered direct from the Publishers of The Aeroplane, Union Bank Buildings, Carey Street, W.C.2.

THE EXHIBITION OF ENEMY AIRCRAFT.

The public exhibition of enemy aircraft now being held at the Agricultural Hall, Islington, has aroused a great deal of public interest, and in consequence inquiries have been received as to the date of publication of the special issue of The Aeroplane containing a full description of the exhibits.

As regular readers of The Aeroplane who have visited the exhibition know, fully illustrated descriptions of practically every aeroplane and engine on view at the Show have already been published in The Aeroplane by kind permission of the Technical Department, Ministry of Munitions. It would, therefore, be of little use to review the exhibition, machine by machine.

It should, however, be remembered that the Show is open all the week from 10 a.m. to 8 p.m., excluding Sundays, on which day the exhibition opens at 3 p.m. Admission costs 1s., which in these days is less than the cost of one average drink, and the Show is of far more lasting value than any drink can be.

AERIAL PROPAGANDIST LITERATURE.

The many and varied relics of the British Museum, which have been hidden by sandbags for some time as a protection against bombs, are being replaced in their old positions, preparatory to reopening the Museum to visitors.

Of considerable interest are the copies of propaganda leaflets which were scattered behind the enemy's lines by British aviators, and some intended for the encouragement of the French and Belgian populations of invaded territory.

It is expected that the Museum will be open to the public before Christmas, although all the relics may not be in position by then.

AERIAL NAVIGATION LAWS.

The creation of a permanent committee on Aircraft Laws covering national and international aerial navigation has been authorised by the Board of Governors of the Aero Club of America. The members of the committee declare that they have reached the conclusion that Federal registration of aircraft, the same as the registration of ships, is a necessary safeguard in the interests of all concerned.

Discussing the issue of the freedom of the air the members call attention to the fact that all aerial Navigation Acts of European nations are intended to restrict the circulation and use of aircraft. They say that they are essentially military measures, restricting aerial navigation to certain zones.

AN OPENING FOR BOYS.

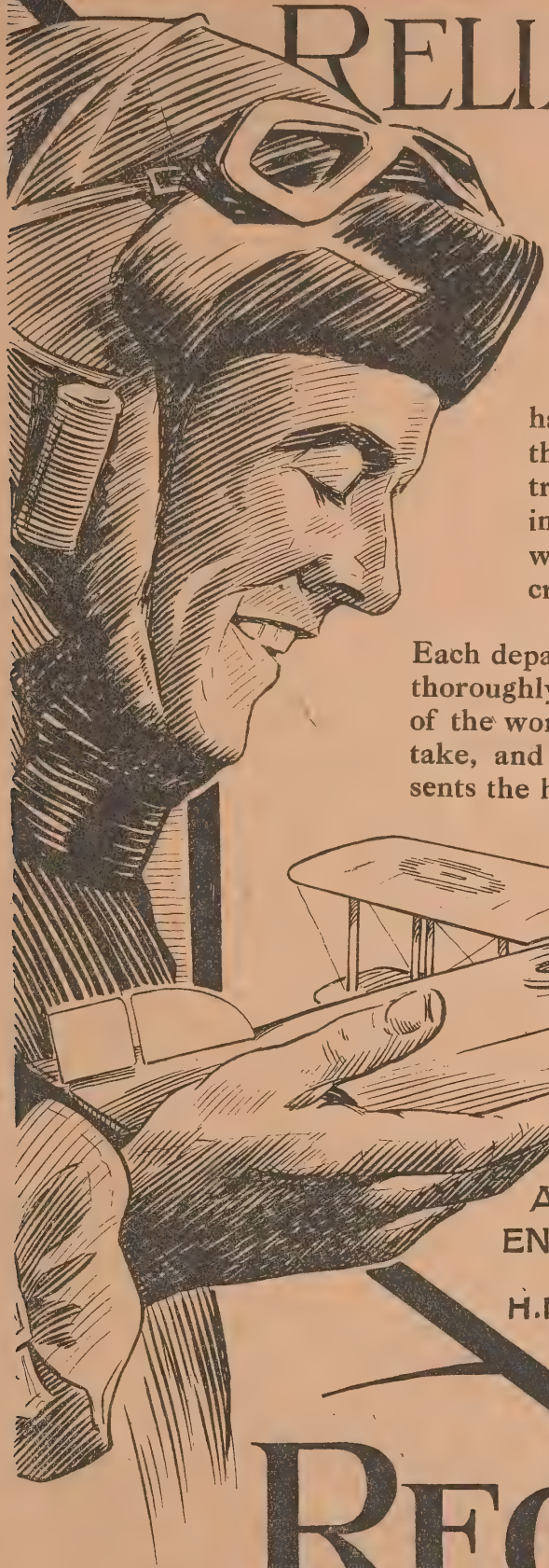
The Royal Air Force is now open to receive a limited number of boys of good physique with experience of metal or woodworking trades between 16 and 17 years of age, for training as Air Mechanics.

Enlistment will be for eight years' Service, and four years with the Reserve.

Application for full particulars should be made to the nearest R.A.F. Reception Depot or to the Local Labour Exchange.

The following is a list of the Royal Air Force Reception Depots:—40, Upper Brook Street, Mayfair, London, W.1; 8, Tyndall's Park Road, Bristol; 12, Newport Road, Cardiff; Carlton Chambers, 35, Paradise Street, Birmingham; 8, George Street, Nottingham; 12, Abercromby Square, Liverpool; The Mount, Springfield Mount, Leeds; 10, Sydenham Terrace, North Road, Newcastle-on-Tyne; 9, Somerset Place, Sauchiehall Street, Glasgow.

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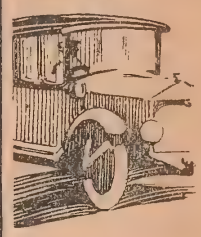
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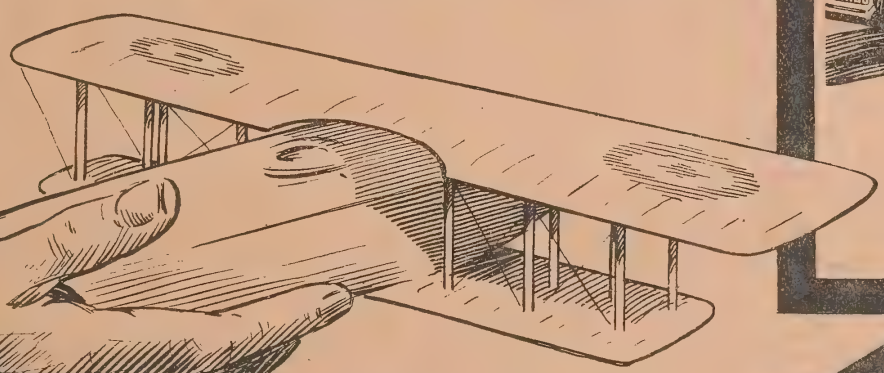
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THE USE OF CLOUDS IN WAR FLYING.

By A War Pilot.

To the novice clouds present an added terror: they stand for bumps, for loss of direction, and, at the worst, for the dreaded spinning-nose-dive, culminating either in a successful righting of the machine and a proud exposition on flying, or perhaps in——

To the old hand they mean many things, scenic beauty, sometimes of a very rare nature, the wilder delight of exhilarating games of hide and seek, or the opportunity of gaining experience—for cloud travelling is not easy, and much has yet to be learnt about it.

But it is to the war pilot that clouds mean most. He is a small G.O.C. on his own, and must work out his own strategy. Clouds offer him the same difficulties and opportunities as rivers, forests and mountain ranges present to a general in the field. They afford asylum to the vanquished or to the numerically inferior, and endless opportunities for ambush to the skilful tactician.

The Germans, being of late usually numerically inferior, and nearly always inferior in open tactics, have consistently studied the use of clouds. The wily Fokker will "sit" in a cloud for some time, and suddenly dive out of it. Perhaps he will find an English artillery machine below him. He will swoop down and fire a long burst and then climb rapidly back to the shelter of the friendly cloud. The occupants of the R.E.8, spinning terribly in flames, may never have seen their assailant.

Naturally, defensive and offensive tactics in relation to clouds are widely different. The artillery pilot has usually to adopt defensive tactics. Consequently, he regards clouds, firstly, as a refuge in time of trouble, and, secondly, as a possible ambush of an attacking foe.

He must have an uninterrupted view of the ground, so must fly below the clouds. He should, therefore, fly as close to them as possible. Then he can climb up into them without loss of time in case of danger, and he will have the advantage of height over any enemy aeroplane who may chance to dive suddenly out of them.

On the other hand, he will present a good target to "Archie," who has probably got the exact height of the clouds, but he can gain relief at any time by climbing into them and changing his direction. The most dangerous height is about 1,500 ft. below the clouds, at which height an enemy aeroplane diving out of them would have the advantage of position and surprise.

Offensively, clouds are a great help to the solitary hunter. If hard pressed he can retire to them, to sally forth again, and possibly surprise one or more unsuspecting enemies. Again, if the clouds are low, he can sail far over the lines above or in them, and when, having worked out his course with due regard to the strength and direction of the wind, he is over or near an important camp or town, he can dive down through them, do immense execution with bomb and bullet before his presence is discovered, and return unmolested the way he came.

All this leads to the subject of flying and keeping direction in clouds. The old theory of mysterious agencies in a cloud, which set the compass swinging and the machine spinning, have been exploded.

The compass only swings when the machine is turning, and becomes steady again when it resumes a straight course. Severe bumps are felt on the edge of clouds, but are not often met with in them. The tail of the machine is not visible, but the instruments are, and they are sufficient. With practise you can keep the compass and "bubble" steady, and, knowing the strength and direction of the wind, navigate your machine with as much success as a skilful captain will steer his ship in a thick fog.

With the improvement of aerial compasses and the perfection of aerial navigation strange developments are possible. On a rainy day, when no one is suspecting danger, a shower of bombs may come hurling from the clouds onto the heart of a metropolis. The enemy bombers have exactly calculated their course, keeping their respective distances by means of delicate sound instruments, and at the determined time have released their bombs. Bombers will, in any case, probably prefer a cloudy day, as giving them protection from the anti-aircraft barrage.

A FLIGHT ACROSS THE ANDES.

Reuter's correspondent writes from Santiago de Chile on Dec. 12th:—

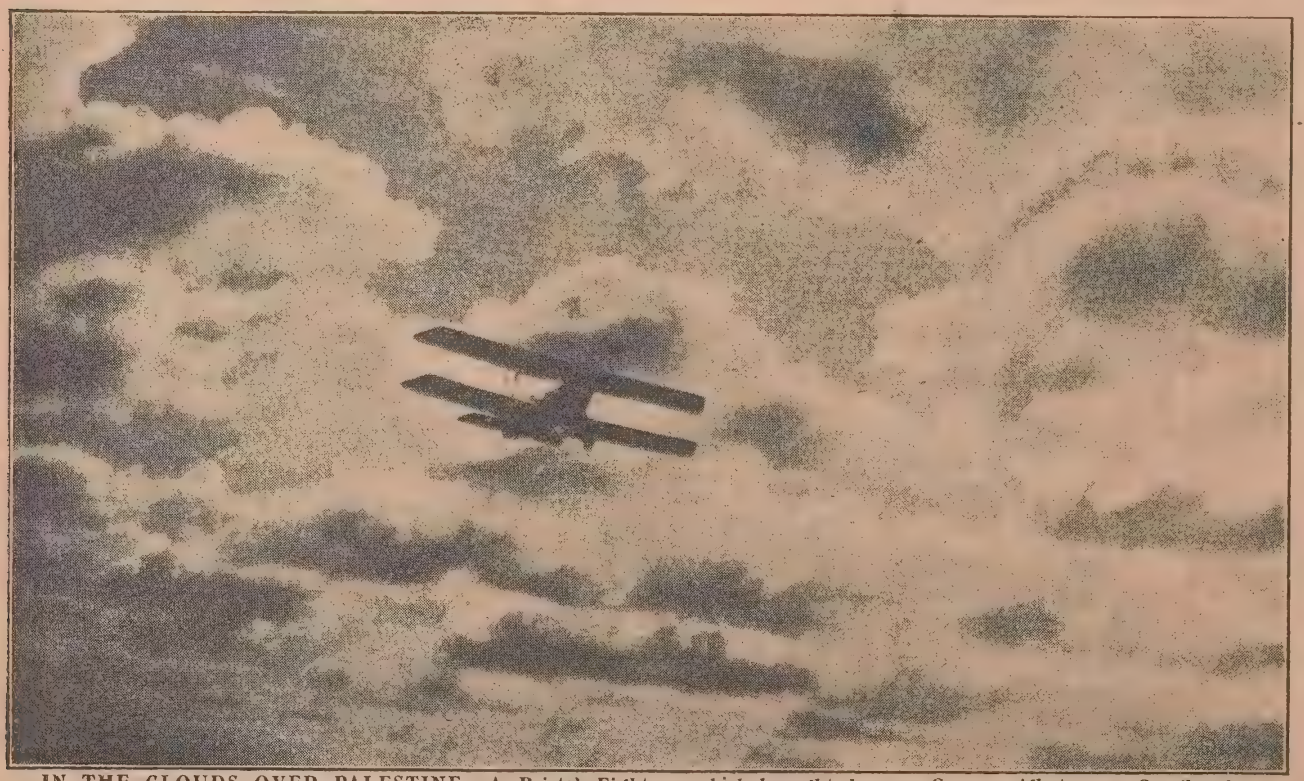
The following telegram has been sent by the Chilean Minister of War to the Chilean Minister in London:—

"This morning Lt. Godoy, of the Military School of Aviation, flew from Santiago to Mendoza in the Argentine in an hour and a half, flying over the Cordilleras of the Andes and establishing a height record. The aeroplane used was an English Bristol.

"The Minister of War takes this opportunity of congratulating the British Government upon the excellence of this British aeroplane, and feels that the result of the flight does the greatest honour to the instruction given to Chilean aviators by the British Major Huston."

AN AUSTRALIAN EXPEDITION.

According to a Melbourne telegram, Mr. Lloyd is heading an expedition of six experts, with aeroplanes and motor-cycles, to leave Sydney on January 14th for a survey of the Trans-Australian route to Darwin and thence to the Eastern Archipelago, India, and Egypt.



IN THE CLOUDS OVER PALESTINE.—A Bristol Fighter, which brought down a German Albatros at Gozelbazel, Palestine, in the autumn of 1917, is here seen starting out against a cloudy sky.

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SOME RECENT NAVAL EVENTS.

One of the events of the week—from the Naval point of view—appears to have been the visit of the British Maritime Sub-Commissions to various air stations in and around the Frisian coast on Dec. 8th. Borkum, Bornholz, Helgoland and the airship station of Alhorn were visited. The inspection is said to have been very thorough.

Here follows the description of the destruction of a German submarine which took place last May :—

The submarine attacked a convoy off the East Coast and torpedoed the leading ship of the port column. An armed trawler immediately dropped a depth charge. Other patrol vessels and an aeroplane followed suit, and a motor launch reported that after the fourth charge had been dropped a small under-water explosion was felt.

The convoy proceeded south, oil bubbles having been seen to rise in the neighbourhood of the depth-charge attack.

The armed trawler then employed her listening apparatus, and heard the submarine, apparently in a damaged condition, upon four separate occasions. The enemy was bombed on each occasion.

A seaplane and a destroyer next sighted a periscope, which they attacked with bombs and depth charges. The seaplane reported that the enemy took three minutes to submerge properly, and appeared to be in difficulties.

At noon the following day a line of depth charges was dropped, and for the last time the enemy was heard by the armed trawler.

Later an obstruction was located on the bottom, but, owing to the tide and depth of water, diving operations could not be carried out. Information at the disposal of the Admiralty enabled them to classify the destruction of this submarine as "known"—that is, a certainty.

On Dec. 12th Vice-Admiral Sir Roger Keyes was presented with the honorary freedom of the Borough of Dover. The ceremony took place in the Town Hall, the company including Lord and Lady Duncannon, Lord Northcliffe, Lord Northbourne, and the Mayor of Dover (Mr. F. W. T. Farley).

Admiral Keyes spoke concerning the work of the Dover Patrol, and stated that the Flanders submarine flotilla had lost 30 submarines between Jan. 1st and Sept. 1st of this year. Incidentally, he claimed the Dover Patrol had sunk more submarines than had any of the other Naval forces.

He added that some weeks after the attack on the auxiliary patrol in February 18 German destroyers bombarded La Panne and Dunkirk. They were intercepted on their return journey by an Anglo-French destroyer flotilla under Botha, which sunk several of the enemy. Admiral Keyes said in this connection :—

"In accordance with the captured operation orders, the enemy seaplanes came down at dawn to see the result of their bombardment, and met some of the Dover Patrol air forces, which destroyed four of them, and sent the others flying homeward.

"Our claims, though denied, have been corroborated from enemy sources since the capture of Bruges.

"From that day onwards the Folkestone-Grisnez Patrol has never been challenged.

"The sailors of the patrol owe a great debt to the Air Force of the Dover Patrol in all their operations on the Belgian coast throughout the past four years. Dover, and indeed London, owe much of their comparative immunity from air attacks to the great gallantry and initiative of the Dover Patrol Air Force in repeatedly attacking at very low altitudes the aerodromes at which the German aircraft used to assemble for raids on England."

Dover appears to have had a somewhat rough time of it during open hostilities, according to one of those unofficial statements, which appear in all newspapers and are worded alike in each.

The first air-raid upon the town took place on Christmas Eve, 1914, and the first moonlight air-raid on Jan. 22nd, 1916. The account does not actually say how many raids were made, but says that 185 bombs were dropped.

The damage done to the town is estimated at £30,000, and the casualties were 14 killed and 46 injured. However, some damage must have been caused by sea bombardment, as must some of the casualties.

It is claimed by the Dover R.N.V.R. Anti-Aircraft Corps, who were disbanded in 1916, that they were the first Corps in England to illuminate a Zeppelin—presumably with a searchlight, although the account does not say so. The Zeppelin is stated to have been damaged and to have descended at Ostende.—S. F. B.

TORPEDO AEROPLANES.

This paper has on various occasions during the war commented on the obtuseness of the Navy in not appreciating the possibilities of torpedo-carrying aeroplanes, despite the good work done by at least one such machine in 1915.

In view of the fact that in future wars torpedo-carrying aeroplanes must play an enormously big part in Naval operations, it is only just to place on record the name of the actual originator of the idea.

The scheme for releasing a torpedo from an aeroplane was actually originated by Lt. Douglas Hyde-Thomson, R.N., in 1913. This officer was killed during the present year as Lieutenant-Colonel, R.A.F., at which time he held the post of chief of wireless telegraphy in the Naval branch of the R.A.F.

Lt. Hyde-Thomson wrote a paper on the subject of torpedo aeroplanes which he submitted to the Captain of H.M.S. "Vernon" on Aug. 7th, 1913. This paper was submitted to the Naval Aeronautical Authorities of the period. One officer of high rank turned it down forthwith on the grounds that he did not consider that the time was yet ripe for the consideration of such an idea. Capt. Sueter, however, who was then Director of the Air Department at the Admiralty, at once appreciated the idea, with the result that the preliminary specification of the first patent on the subject was filled at the end of March, 1914, and was taken out in the joint names of Capt. M. F. Sueter, R.N., and Lt. D. Hyde-Thomson, R.N.

This action is in strict accordance with the Naval custom which decrees that in taking out a Service patent a junior officer shall bracket the name of his commanding officer with his own in the specification.

It was common knowledge in aviation circles in this country during 1914 that experiments were being made on Southampton Water with torpedo-carrying aeroplanes, and the fact that these particularly effective weapons were not developed is one of the mysteries of the Navy's conduct of war.

However, it may be placed on record, without fear of contradiction, that the original work in developing torpedo aeroplanes was done by Lt. Hyde-Thomson with the active participation and encouragement of Capt. Sueter.

SEA-POWER.

On Wednesday, Dec. 4th, the Sea-Power Exhibition was opened at the Grosvenor Galleries, New Bond Street, W.1. The exhibition is worth a visit from those interested in the work of the Royal Navy and its auxiliary branches, including the R.N.A.S.

In Room I various paintings by Sir John Lavery are hung. Several of these are paintings of rigid and non-rigid airships, and are quite convincing, particularly the painting of the convoy from N.S.7.

The kite-balloons in the painting of "The Firth of Forth, Wind, 1917," appear to be unattached to any ship, and, somehow, the aeroplane—which is presumably an S.E.—in the "Aerodrome, East Fortune, 1918," seems too large in comparison with the sheds in the background and the big "stiff-ship" above the sheds. But, doubtless, these two pictures are faultless from the artistic point of view.

Another exhibit of even greater interest than some of the pictures is the case of ships' crests and badges in Room I, some of which are surprisingly apposite.

In Room II are hung paintings and portraits by various artists, chief among whom is Capt. Philip Conrad, R.F.A. With all due respect to Capt. Conrad, one suggests that he has still to learn the difference between a Sopwith Camel and the German Brandenburger monoplane, for the "Camel" in No. 65 might well be any machine at all.

The many pictures of the Harwich Forces are quite amusing, and the "Sailing Race" calls to mind Bartimeus' "Galley-day." But why just poor old "Melampus" has been singled out for so much attention is not clear.

Two fine models of Zeebrugge and Ostend harbours are shown in this room. Strangely enough, both are made by a soldier, namely, Lt. F. J. Wilcoxson, R.F.A.

Models of "dazzle" ships designed by Lt.-Comdr. Norman Wilkinson, R.I., O.B.E., R.N.V.R., are stated by the catalogue to be in Room II. As a matter of fact, they are in Room III. Among them are models of "Argus" and "Vindictive," seaplane ships, and a photograph of "Furious."

The work of Maj. Charles Pears, R.M., in Room III, is sheer delight. The writer knows nothing of art, and, therefore, all criticism is merely from the technical view; but there is no need to refer to the catalogue before one recognises the class of ship pictured by Major Pears. Aircraft does not appear largely in his work, but when it does it is undeniably aircraft.

Incidentally, the scrap off Borkum on Aug. 11th last would appear to have been a bigger affair than any realised at the time. This scrap is the subject of several pictures by Maj. Pears, and the K class submarines seem to have furnished inspiration. There are also plenty of destroyer pictures in this room.

Rooms IV and V, while containing some extremely interesting exhibits, hold nothing directly concerned with aeronautics.

In Room V the paintings of Maj. F. Dodd, R.M., are shown. These deal more with submarines and trawlers and such craft, but again bear out the fact that the work of the man whose day's work is with the Navy is the most convincing.

Among the ships portrayed by the various artists are several "hush-hush" boats; but the exhibition, taken on the whole, is not so truly Naval as the Naval pictures were. The profits of the exhibition go to the King's Fund for Sailors, and, so far, no closing date has been announced.—S. F. B.



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FROM ENGLAND TO INDIA BY AIR.

It is announced officially that Major-General W. G. H. Salmond, D.S.O., Captain Ross-Smith, A.F.C., and two mechanics arrived at Delhi on Dec. 12th in a Handley Page aeroplane after a flight in several stages from Cairo. They were accompanied by Brig.-General A. E. Borton, D.S.O. (G.O.C. Palestine contingent, R.A.F.) as far as Baghdad.

The table of stages between Cairo and Delhi is as follows :—

Date.	Stages.	Distance. Miles.	Duration. H. M.
Nov. 30th ...	Cairo-Damascus	385	5 45
Dec. 1st ...	Damascus-Baghdad	523	6 50
	Baghdad-Bushire	515	
	Bushire-Bandar Abbas	397	
	Bandar-Abbas-Charbah	400	
	Charbah-Karachi	328	
Dec. 12th ...	Karachi-Delhi	650	
	Total	3,198	App. dur. 44 h.

The dates and duration of certain stages in the flight are not given,, and it is not clear whether the distance between Karachi and Delhi was covered without an intermediate landing or not.

The Handley Page aeroplane in which the flight was made was flown from England to Egypt earlier in the year, and was employed in the final operations against the Turkish forces in Palestine.

Supplies of food and water for ten days were carried when the aeroplane left Cairo in view of a possible forced landing in the desert between Damascus and Baghdad. But in so far as is known, no untoward incident occurred throughout the journey.

The flight in itself proves nothing which was not already known in regard to aerial navigation. It was within the power of the majority of modern aeroplanes. Many flights of greater duration than any single stage in this journey have been made during the past six years.

The route selected by General Salmond was simple, in so far as navigation was concerned. From Cairo to Damascus the Mediterranean was always in sight to the west. Two hundred and fifty miles over the desert from Damascus the Euphrates provides an easy guide to the Isa Canal which links that river with the Tigris at Baghdad. From Baghdad the Tigris and the northern shore of the Persian Gulf leads to Bushire, whence direction is given by the Baluchistan coast to Karachi. The rest of the journey to Delhi is well provided with landmarks.

The official reason given for General Salmond's flight is that he has been asked to confer with the Government of India as to aerial development in that Empire. His varied experience and his knowledge of service conditions should be of the highest value to the Viceregal government.

ANOTHER LONG-DISTANCE FLIGHT.

On Dec. 13th a Handley Page aeroplane left Martlesham for India. The machine was of the same type as the machine which lately carried 40 passengers over London, and is equipped with four Rolls-Royce engines and petrol tanks with a capacity of 12,000 gallons. The machine was piloted by Major A. S. Maclaren, M.C., with Capt. Halley as assistant pilot. Brig.-General McEwen, D.S.O., was a passenger, and the crew consisted of three mechanics. Unfortunately, this machine was forced to land in France owing to a thick fog.

THE KING'S BOXING TROPHY.

On Wednesday, Dec. 11th, the boxing tournament for the King's Trophy opened at the Albert Hall. The proceedings started at 2.30 p.m. in the afternoon and in the evening at 7.30 p.m.

The following was the R.A.F. Team :—

Captain.—Capt. F. G. Sheriff, M.C.

Heavy-weight ..... Serjt. J. Beckett.
Light-Heavy-weight ..... Serjt. F. Sale.
Middle-weight ..... Cpl. Lumenfield.
Welter-weight ..... 2nd Air Mech. E. J. Swinnerton.
Light-weight ..... Cpl. G. V. Gamester.
Feather-weight ..... Cpl. E. Proudlove.
Bantam-weight ..... 2nd Air Mech Hughes.
Fly-weight ..... 2nd Air Mech. H. Groves.

At the end of the first day the British Army and the Royal Air Force were leading with 21 points each, the Royal Navy and Marines coming second with 19½.

Unfortunately the King was prevented by a slight cold from being present on the last day, Dec. 12th, but he was represented by Capt. H.R.H. the Prince Albert, R.A.F., who presented the shield.

The Trophy was won by the British Army by 11 points, the R.A.F. were placed fourth in the list with 32½ points.

	Points Gained.
British Army	50
U.S. Army	39
Royal Navy	32½
R.A.F.	32½
U.S. Navy	32
Australia	28
Canada	18
New Zealand	14½
South Africa	10½

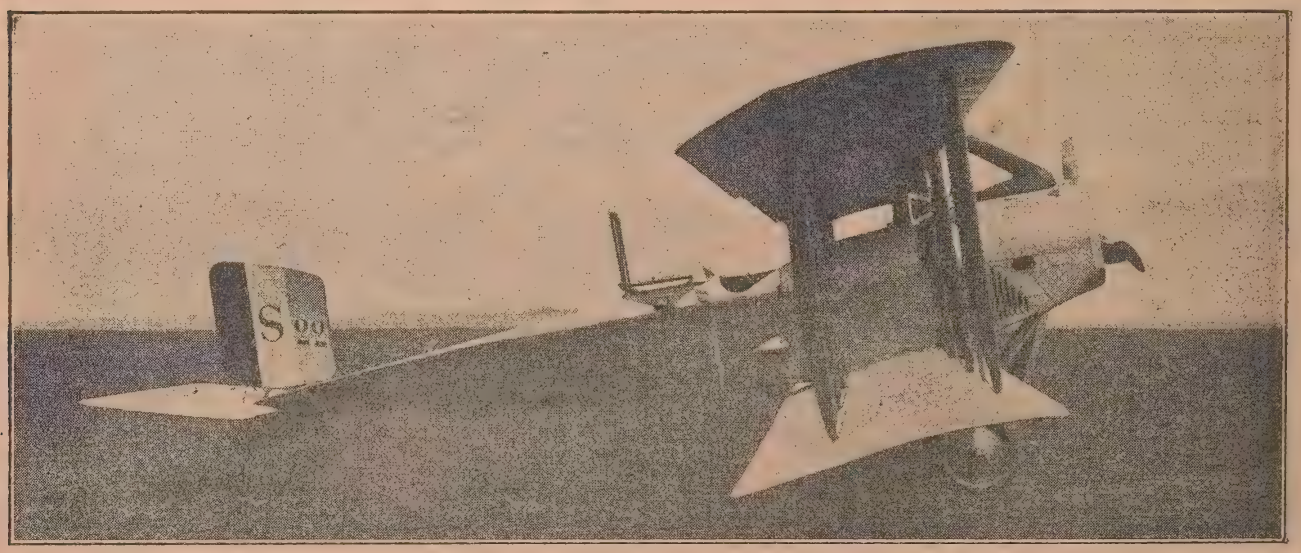
ELECTION FLYING STOPPED.

It is understood that Lord Weir, Secretary of State for the Air Force, vetoed the proposal of Col. Sir John Norton Griffiths, the Unionist Coalition candidate for Central Wardsworth, to fly in an aeroplane while electioneering. Sir John had made all arrangements for a flight from Central Wandsworth to Wednesbury, his old constituency, to address a Coalition meeting there on Dec. 12th, and had intended making the double journey, a distance of 240 miles, and speaking at the meeting, in four hours, returning in time for another Coalition meeting in Central Wandsworth in the afternoon. The Air Minister, however, very properly refused him permission to make the flight.

TO R.A.F. MOTOR-CYCLISTS.

So many members of the R.A.F. were before the war, and are now, keen motor-cyclists that it will be of interest to many readers of this paper to know that the Public Schools Motor Cycle Club, which was quite a flourishing institution before the war, is now being re-formed with a view to the renewal of its sporting activities at an early date.

Any Public School readers of this paper who are interested in reviving the Club are asked to write to H. B. R. A., care of The Aeroplane, 166, Piccadilly, W.1.



Side View of a 1917 type PAUL SCHMITT (French) Biplane.

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NAVAL & MILITARY AERONAUTICS



GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

AIR MINISTRY, Dec. 10th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officers, 2nd Cl. (T.).—G. F. Evans (Capt., R.E., Spec. Res.), and is granted a temp. commn. as Capt., and to be actg. Maj. whilst so empld., April 1st.

Staff Officers, 3rd Cl.—And to be actg. Capts. whilst so empld. if not already holding that or higher rank :—Maj. G. V. Carey, Nov. 9th; Lt. (actg. Capt.) J. M. Bell, vice Sec. Lt. (Hon. Lt., actg. Capt.) C. M. Hennell, who relinquishes the actg. rank of Capt., Dec. 2nd. Lt. H. S. Rogers, Oct. 8th.

The following temp. appts. are made :—Staff Officers, 2nd Cl.—And to be actg. Majs. whilst so empld. :—Capt. C. C. Treatt, Sept. 16th; Capt. D. MacK. P. Riach, M.B.E., Nov. 3rd.

Staff Officers, 3rd Cl.—Capt. H. S. Ward, Sept. 5th; Lt. (Hon. Capt.) F. C. Townshend, and to be actg. Capt. whilst so empld., Nov. 29th; (P.) Capt. O. H. Frost, M.C., vice Capt. N. C. F. Francis, Nov. 17th; (T.) Capt. F. H. Tyas, Nov. 30th.

The date of appt. of Capt. P. C. Carr is Aug. 7th, and not as stated on page 13,920 of the "Gazette," Nov. 26th.

FLYING BRANCH.—Maj. T. O'B. Hubbard, M.C., to be actg. Lt.-Col. whilst empld. as Lt.-Col. (A.), Oct. 12th.

Capt. P. F. Fullard, D.S.O., M.C., to be actg. Maj. whilst empld. as Maj. (A.), Sept. 24th.

Capt. E. P. Will, A.F.C., to be graded for pay as Capt. whilst empld as Capt. (A. and S.), Nov. 6th.

Sec. Lt. (actg. Lt.) (Hon. Capt.) E. F. Ambler retains the actg. rank of Lt. whilst empld. as Lt. (A.) from (T.), Nov. 23rd.

Lts. to be Lts. (A.) from (Obsr. Officers) :—W. R. McMenan, Oct. 9th; C. E. V. Graham, M.C., Oct. 15th; W. R. Kellough, Nov. 3rd; S. MacC. Peterkin, M. A. B. Boyd, Nov. 19th.

Sec. Lts. ((late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.) :—G. C. Hinge, R. W. S. Winter, S. E. Calvert, Nov. 16th; C. Watson, Nov. 18th.

The following are granted temp. commns. as Sec. Lts. (A.) :—A. O. Helps (Lt., Som. L.I., T.F.), and to be Hon. Lt., Oct. 14th; R. L. Barnes (temp. Sec. Lt., S. Lanc. R.); F. J. Cotsell (Sec. Lt., Lond. R., T.F.); H. A. Raymond (Sec. Lt., W. Rid. R., Spec. Res.), Nov. 16th; L. H. Mackay (Lt., Sco. Rif.), and to be Hon. Lt., Nov. 17th.

The following Cadets are granted temp. commns. as Sec. Lts. (A.) :—T. B. Kelly, F. Kerr, E. Laycock, J. H. Mahoney, V. H. Mayers, D. McR. MacKenzie, J. C. McLachlan, R. F. Nelson, S. H. Phillips, H. A. Phinney, H. G. Pitt, F. Ray, L. A. Robertson, R. W. Robertson, W. J. Rooney, F. R. Rutley, V. W. Shaughnessy, G. T. Silke, D. M. Smith, W. J. Sturgeon, W. L. Warke, J. R. Watt, G. P. Silke, D. M. Woodman, J. Woods, H. A. Zinck, S. W. Albertson, W. V. Ashforth, J. L. Baird, J. R. Baird, C. C. Brooks, W. G. Burns, I. E. Cameron, H. D. Chandler, J. A. Connolly, R. G. Consterdine, J. W. Crawford, J. P. Davey, L. Driscoll, L. P. Flynn, W. I. Foley, W. B. Fraser, R. R. Fullerton, D. A. Goodine, C. W. Graburn, A. G. G. Greene, H. G. Hanneman, H. D. Hoolihan, H. A. Hubbard, E. B. Hughson, W. J. H. Johnson, Oct. 24th; I. T. Atwood, R. L. H. Barber, I. W. Beverley, C. L. Birmingham, R. F. Brown, F. V. Collins, A. M. Crawford, R. H. Ellard, P. Gallagher, N. H. Glaab, F. M. Gulland, F. J. Ham, A. Hearns, D. D. How, C. A. D. Jennings, E. W. T. Lee, J. G. S. Lennstrand, S. Lestrade, J. D. MacKinnon, R. C. MacKinnon, K. W. Mayhew, D. G. Moore, A. G. McLerie, J. W. Persons, R. G. Pigeon, J. W. Pilgrim, E. J. Pond, J. V. Poulson, L. W. Shelley, L. D. Squair, N. W. Squire, J. E. Waller, J. C. Woodward, H. V. Woolidge, H. O. Wyse, J. W. Smith, Oct. 31st.

Flt. Cadets are granted temp. commns. as Sec. Lts. (A.) :—110299 J. Craig, Aug. 27th; G. D. Dunthorn, Sept. 3rd; J. F. Dodd, Sept. 16th; 911427) G. B. Noble, Sept. 17th; G. R. Stark, Sept. 22nd; J. E. Quinn, Sept. 25th; G. Rowe, Oct. 3rd; B. Buckle, L. Crowther, Oct. 25th; 201546 G. S. Holroyd, Oct. 26th; G. F. Brown, Oct. 31st; D. D. H. Craig, Nov. 1st; C. M. Pavey, Nov. 13th; E. F. Green, Nov. 16th; 18213 T. H. Fuge, Nov. 17th; 108927 R. J. Ewins, 92559 R. W. Hill, 32575 W. R. Gilmartin, 972279 I. Turkington, 137573 L. F. King, Nov. 18th; 171346 A. G. Wright, 112241 H. O. Knapp, 1754 R. M. Tate, 4538 E. P. Brown, 320052 C. Marks, 12027 W. G. Roberts, Nov. 19th; 48358 J. G. Hayes, 10133 J. Simpson, 154677 S. W. Jackson, 137091 A. F. Rowland, Nov. 20th; 93348 W. A. Gallon, 117334 R. F. Tunaley, 86223 T. D. Sterland, 171642 A. R. Giroux, 151398 P. C. Mason, 76618 A. G. Ellis, 13/59222 R. D. Wayman, Nov. 21st; 126320 H. L. Erb, 10482 R. T. Wickham, 117586 L. J. Bradley, 2644 A. T. Jeffrey, 522564 E. B. Saunders, 92527 P. Naylor, 128009 F. J. Walton, 249934 D. Meyers, 303406 J. W. Rowley, 513380 F. W. Weatherdon, 851032 H. Lyne, 110191 J. W. S. Gibbs, 30250 B. Rhodes, 100139 A. Clayton, Nov. 22nd; 460537 F. L. W. Irving, 10/156290 D. W. Thomas, 137047 W. A. S. Whalvin, L. M. Kelly, Nov. 23rd; 117452 W. H. Forster, 12490 C. W. Powell, 96536 C. E. Jackson, Nov. 24th; 57186 H. J. O. Bach, 24796 D. R. Dunn, 71148 J. D. W. Hindson, 89284 G. Bradley, P/6058 C. H. Osborne, 49079 L. H. V. Webster, 110502 C. Hempel, Nov. 25th; 6936 H. J. W. Alexander, 2672 R. E. Williams, Nov. 26th; 80529 E. F. Birkett, Nov. 29th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (A. and S.) :—100530 G. McLeish, July 30th (since deceased), 137883 W. A. Saffery, Sept. 21st; T. Blatchford, Oct. 20th; G. Brownrigg, Oct. 28th; 177447 T. E. Williams, 47978 C. C. Rollason, 177725 G. J. Sansum, 29678 J. Mitchinson, 100451 T. E. Cotton, Nov. 13th; 7/21002 H. H. B. Newberry, 8/25324 A. M. Knill, 137071 H. MacD. Leith, 137889 E. G. Barnes, 176482 D. G. B. Theunissen, 176578 H. J. Muir, 176492 J. B. Wilson, 176524 L. G. Green, 137884 A. S. Adams, Nov. 16th; 177403 S. W. Cobb, 178724 P. Rockley 179083 W. M. Smith, 177310 T. H. Southern, 177572 A. H. Stent, 522070 C. C. Briggs, R. A. Button, Nov. 18th; 137216 C. D. Hurndall, 271036 R. W. Charlton, 177273 R. Harris, Nov. 21st, 302879 S. C. Foster, 96134 K. J. F. Davey, Nov. 22nd, 179113 G. A. Elliott, 179108 M. H. Otway, 179159 R. R. Morton, 179169 J. E. Russell, 179171 H. D. Riddell, 175481 R. E. Napier, 178136 G. Alston, 178140 G. H. Alexander, 176499 H. F. Binstead, 178153 A. H. Bean, 178445 G. F. Blaine, 178296 C. B. Borcherds, 178152 A. G. Brenchley, 178159 J. S. Cooper, 176360 L. T. Deary, 178162 C. F. V. Duke, 176533 A. R. Hartley, 178181 O. T. Jannasch, 178180 E. C. Jennings, 178178 F. Johnson, 178188 T. C. A. Meyer, 178202 G. Parsons, 176616 F. J. Seaton, 137268 V. B. P. MacCallum, 176535 C. D. Heanan, 176536 J. A. Hart, 176550 J. Jones, 178189 B. J. Maytom, 178192 M. C. G. Meyer, 178194 J. D. S. MacCallum, Nov. 23rd; 1534 G. G. Dow, 110936 A. W. Glover, 236755 W. A. Vallance, Nov. 27th; 137805 V. F. Hardy, 176459 A. L. Botha, 174676 J. W. Newdigate, 176483 R. F. Thesen, 176504 J. G. E. Carrington, 176507 A. G. Cook, 176614 H. McL. Steeples, Nov. 30th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (Obsr. Officers) :—A. Roche, July 26th; A. V. Street, Sept. 18th; C. L. Nicholson, Oct. 1st; E. Telfer, Nov. 9th.

Prob. Flt. Officer J. Stopford (late R.N.A.S.) is granted a temp. commn. as Sec. Lt. (Obsr. Officer), Nov. 11th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers) :—C. G. Mobbs (temp. Sec. Lt., Northd. R.), May 21st; F. Fletcher (Lt., R.F.A.), and to be Hon. Lt., July 13th; S. P. J. Yeates (Sec. Lt., Devon R., T.F.), Sept. 1st; W. A. MacMillan (Lt., R.G.A., T.F.), and to be Hon. Lt., Sept. 18th; J. L. McLennan, M.C. (Capt., A.S.C.), and to be Hon. Capt., Sept. 22nd; R. P. A. Crisp (Lt., E. Ontario R., C.E.F.), and to be Hon. Lt., Sept. 30th; T. S. Campbell (Sec. Lt., W. York R., Spec. Res.); C. G. G. Fortune (temp. Sec. Lt., Manch. R.); E. Graham (Sec. Lt., K.O. Sco. Bord., T.F.); H. F. Hicks (Lt., Nova Scotia R., C.E.F.), and to be Hon. Lt.; P. C. Molland (temp. Sec. Lt., K.R. Rif.); J. W. Kembery (temp. Sec. Lt., R.W. Fus.); A. W. Piper (temp. Sec. Lt., Essex R.); D. G. Medus (Lt., R.F.A., T.F.), and to be Hon. Lt.; A. L. Rice (Lt., Quebec R., C.E.F.), and to be Hon. Lt.; S. Toby (temp. Sec. Lt., K. Lpool. R.); W. Wilson (temp. Sec. Lt., Northd. Fus.), Nov. 8th; R. S. T. Wood (temp. Sec. Lt., A.S.C.); C. A. Mackintosh-Walker (Capt., Cam. Highrs.), and to be Hon. Capt.; G. B. Baird (temp. Lt., R.G.A.), and to be Hon. Lt.; F. Cartwright (Sec. Lt., R.F.A., Spec. Res.); G. W. Hammond (temp. Sec. Lt., R. Suss. R.); A. E. Baxter (Sec. Lt., R.G.A., Spec. Res), Nov. 9th; T. J. Wilson (Sec. Lt., Lond. R., T.F.); A. V. Bromham (temp. Sec. Lt., Middx. R.); A. J. Midgley (temp. Sec. Lt., Manch. R.); L. Rogerson (Sec. Lt., N. Lanc. R., T.F.); G. Straw (temp. Sec. Lt., R. Ir. Fus., Spec. Res.); S. D. Bickmore (Sec. Lt., Lond. R., T.F.), Nov. 14th; F. T. Gummer (Capt., Gord. Highrs., T.F.), and to be Hon. Capt.; C. H. Scaddon (temp. Lt., York and Lanc. R.), and to be Hon. Lt.; R. L. Sweet, M.C. (Lt., High. L.I., T.F.), and to be Hon. Lt.; S. P. Willis (Lt., A.S.C., T.F.), and to be Hon. Lt.; J. H. Skinner (Sec. Lt., R.F.A.); C. P. Stromeyer (Sec. Lt., R.G.A.), Nov. 16th; C. E. S. Dobbs (Capt., A.S.C.), and to be Hon. Capt.; T. H. Thorpe (Lt., R. Suss. R., T.F.), and to be Hon. Lt.; T. W. Watts (Lt., E. York R., T.F.), and to be Hon. Lt., Nov. 23rd; R. E. Shears (temp. Lt., Glouc. R.), and to be Hon. Lt., Nov. 27th; R. Bowman (Lt., R.F.A., T.F.), and to be Hon. Lt.; G. W. F. H. Downer (Lt., R.F.A.), and to be Hon. Lt.; F. R. Daniel, M.C. (Lt., R.F.A., T.F.), and to be Hon. Lt.; J. L. Gilmour (Lt., W. Ont. R., C.E.F.), and to be Hon. Lt.; E. M. Harris (Lt., R.F.A.), and to be Hon. Lt.; S. H. Hodges (Lt., M.G.C.), and to be Hon. Lt.; T. A. Lloyd-Rees, M.C. (Lt., M.G.C.), and to be Hon. Lt.; T. Clarkson (Sec. Lt., Leic. R., T.F.); B. R. Cozens (Sec. Lt., Manch. R., T.F., attd. Notts and Derby R.); W. A. G. Hawker (Sec. Lt., R.F.A., Spec. Res.); D. W. Harris (temp. Sec. Lt., R. Dub. Fus., Spe. Res.), V. G. Hodges (Sec. Lt., S.W. Bord. R., T.F.); E. A. Radcliffe (temp. Sec. Lt., K. Lpool. R.), Nov. 30th.

The following Flt. Cadets are granted temp. commns. as Sec. Lts. (Obsr. Officers) :F. W. Freeman, June 6th; J. T. Hunter, July 21st; 117179 D. H. Calder, 175817 C. E. M. Howard, 175867 J. S. Tinn, 177130 A. V. Westwood, Oct. 24th; 177104 E. F. Darker, 137711 S. Pike, Nov. 6th; 603094 A. G. Colvin, 110253 C. D. Frogbrook, 3/27162 J. Greenwood, 110112 J. F. F. Liddy, M2/103043 T. T. Ginn, 710457 E. Jolley, Nov. 8th; 510335 G. F. Ward, Nov. 9th; 117532 D. L. N. Crowns, 175851 R. H. Coath, Nov. 10th; 198674 H. Chapman, 178670 T. R. Bayston, 137076 J. Bromham, 512506 A. Melville, Nov. 14th; 678059 A. G. Gribble, 2324 E. St. C. Hammet, 772263 F. G. Ellis, 93550 J. P. Henderson, 226105 W. S. Hammond, 529302 R. D. Fish, Nov. 15th; 179679 G. E. Vickers, 136798 D. F. Turpin, 179690 J. S. Gourlay, 179596 L. Bendelow, 179586 H. P. De Roper, 179226 V. A. Wheeler, 176052 E. A. Baker, 76126 W. Gougle, R40211 W. B. Mortimer, 4545 G. G. Lane, Nov. 16th; 176754 G. S. Cooper, 176748 G. J. Baragwanath, M280807 W. A. Smailes, Nov. 17th; 415092 J. Porter, Nov. 18th; 425924 M. Cleland, 176427 F. I. P. Pearce, 177181 C. Skinner, 175886 F. M. Purcell, 110691 A. Critchley, Nov. 19th; 176701 R. C. Richardson, 37447 C. E. Tearne, 177339 V. C. Turner, 178583 P. Jackson, 178541 J. H. Lea, 213957 H. Sincock, 178625 J. Haddow, 177412 V. S. Winchester, 45115 D. R. Rathbone, 132800 W. W. Brown, 177418 J. B. McMeekan, 178799 F. T. Bradley, 177712 V. P. Green, 178890 F. R. Barrett, 177633 V. H. Kidney, 177590 W. T. Goodacy, 34165 H. C. Alden, Nov. 22nd; 518497 H. S. Marfleet, 190293 G. Tattersall, 178869 A. N. B. Odbert, 178727 G. S. Shackleton, 178725 J. S. Short, 178716 R. Kelly, 178711 E. Bickley, 178687 F. J. Hardy, 178778 J. O. P. Barrett, 178653 A. V. Whiteley, 178545 W. M. Nathan, 178527 J. W. Gennard, 178302 J. S. E. Ward, 178303 W. G. Miller, 178291 W. F. Wheeler, 177592 G. Graham, 177560 W. W. R. Watson, 64490 I. J. Whittall, 2155 F. R. Chapman, Nov. 25th; 107926 W. Atkinson, Nov. 25th; 38364 R. E. Barrett, Nov. 29th; 940269 W. J. Scudamore, 346795 G. Russell, 316121 W. Stevens, 316117

(Continued on page 2323.)



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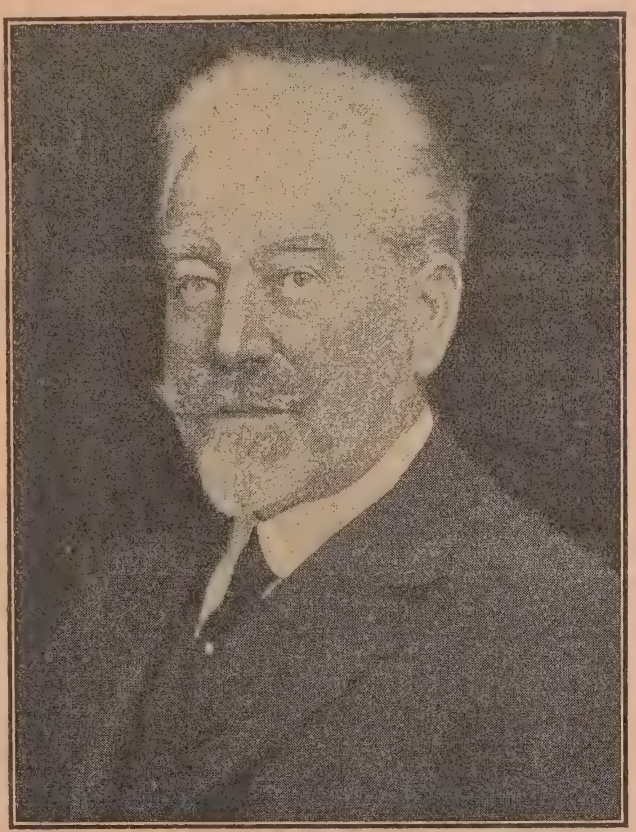
S. E. SAUNDERS AND CO., LTD.

By C. G. Grey.

There can be very few people concerned with aviation or the sporting side of motoring or with motor-boats who do not know the name of Saunders, of Cowes. One certainly believes that the name of Sam Saunders is as familiar as are the names of Cody or Wright among aviators. Possibly, however, to the newer generation of flying people, the firm's name, though, perhaps, familiar as manufacturers of its excellent aeroplanes, is not connected in their minds with actual pioneer work. Yet, as a matter of fact, to Mr. Saunders himself is due some of the most valuable work in the development of hydro-aeroplanes.

Mr. Saunders first acquired a reputation for workmanship of the highest class as a builder of boats on the Thames. From there he migrated to Cowes and specialised on motor-boats, and before very long a Saunders-built hull in a racing motor-boat stood for everything that was best in boat-building. Not being oneself closely connected with motor-boat racing, one cannot give off-hand a list of the famous motor-boats built by the Saunders firm, but two Saunders boats, in particular, stand forth as having made history.

One is the Duke of Westminster's famous boat, "Ursula," which, with her Wolseley engines, beat everything on the water for speed at Monte Carlo. In fact, so badly did she beat everything else that after winning everything before her for a couple of years, she was ultimately barred from further competitions. The second famous Saunders boat was "Maple Leaf IV," a true hydroplane, as differentiated from "Ursula," which was a displacement boat. "Maple Leaf IV" was built for Mr. McKay Edgar, the Canadian millionaire, for the great international motor-boat race, which she won two years in succession, piloted by Mr. T. O. M. Sopwith.



MR. S. E. SAUNDERS, O.B.E.

THE FIRST STEP.

It was, one believes, Mr. Sopwith's connection with "Maple Leaf IV" which, in the first instance, brought Mr. Saunders in touch with aviation. It will be remembered that nothing particular was done in this country in the way of hydro-aeroplane work until 1912, and in 1913 Mr. Mortimer Singer put up a prize for a competition among amphibious all-British hydro-aeroplanes.

Mr. Sopwith made up his mind to win this prize, and proceeded to design a flying-boat for the purpose. This flying-boat consisted of a hull built by Saunders of Cowes, and designed conjointly by Mr. Sam Saunders and Mr. Sopwith, Mr. Saunders putting into it all his vast experience of hydroplane design, and Mr. Sopwith attending to the aeronautical side of it. The body was fitted with wheels which were lowered over the sides so as to permit it to start from and alight on land, and were raised when it was desired to alight on or start from water. The engine used was an 100 h.p. Green.

Piloted by Mr. Harry Hawker, with Lieut. Spenser Grey, R.N., as passenger, this boat made the necessary number of alternate alightings on and starts from land and water on the Isle of Wight and on the Solent, and thus won the Mortimer Singer prize.

FINE WORK.

This was Mr. Saunders' first aerial triumph, but it was by no means his last. Thereafter he built several hulls for flying-boats, including a magnificent piece of work which attracted much attention at the Aero Show of 1914, namely, the hull of the Perry-Beadle twin-tractor flying-boat. This hull, together with the lower main plane and the tail plane, elevator, fixed fin and rudder were constructed entirely of sewn timbers.

All these early Saunders hulls were built on the famous Saunders sewn system in which the various tiny planks of the boat were sewn together by copper wire, a system which had proved eminently satisfactory in racing hydroplanes. This system has, one gathers, been vastly improved recently by the adoption of what is known as the Consuta system. In this a material is used which is lighter than the old copper wire, and, at the same time, does not render the work liable to suffer from the one defect of that system, namely, the possibility of the lines of stitching providing also lines of breakage in case of a smash, and one feels confident that the new Saunders sewn system will be of very high value in the building of future hydro-aeroplanes, whether flying-boats or float machines.

WAR WORK.

At the beginning of the war, Mr. Saunders, whose faith in aviation had not flagged despite the lack of official support before the war, laid himself out to produce aeroplanes, and, with characteristic enterprise, ran up in a remarkably short time enormous factories near his old motor-boat works at Cowes. He devoted himself in these works to establishing the same high standard of workmanship in all his aeroplane work which had made the name of Saunders in motor-boats a synonym for excellence. Also, he laid himself out for output, and there can be few aeroplane shops in the country where the output in proportion to the number of hands employed is as great as that of the Saunders works.

When, after several years of war, the Naval people concerned with aeronautics finally made up their minds that the flying-boat was as good a thing as its advocates preached for several years before the war, it followed, naturally, that the firm of Saunders should be called upon to build the hulls of flying-boats, and, consequently, yet another new branch of the firm had to be established for the production of flying-boat hulls in addition to ordinary shore-going aeroplanes.

Mr. Saunders' energy and enterprise showed itself in this branch of the business as in all others, and in a remarkably short time the output of Saunders hulls became as great a credit to the firm as was its output of aeroplanes previously And, needless to say, the quality of the Saunders hull continued to uphold the reputation of the Saunders boats.

Virtue's Reward.

For a wonder, virtue, in due course, was rewarded, and some time ago Mr. Saunders was gazetted to the Order of the British Empire, and was duly bidden to receive the Order from the King's hands on Thursday last, Dec. 12th. It goes without saying that all wish him long life in which to bear his honourably won decoration.

As to the future intentions of the Saunders firm one is not yet permitted to write, but knowing Mr. Saunders' faith in aviation, and particularly his faith in oversea flying, one is confident that his work in this direction will be continued, and that in due course the name of Saunders will be in the minds of everybody concerned with aviation the hall-mark of excellence in hydro-aeroplanes.

THE BALANCE OF PRODUCTION.

By A. H. B.

One of the essential features of aircraft construction, and one which is so frequently overlooked, is the necessity for adequately balancing the manufacture and acquisition of parts necessary for the completion of the final machine. Too often this matter has been given insufficient attention, with the result that at the finish of a contract large stocks of both finished and unfinished parts are left on the manufacturer's hands, which means both a financial and efficiency loss.

The manufacturer is, at the present time, obviously under a great disadvantage. Important modifications and alterations in the design of a particular type of machine which he may be building are constantly called for, which necessarily upsets arrangements and plans which had been formulated for the production of the machine in its original form. Apart, however, from the waste of surplus material thus occasioned, far too little attention is being paid to the systematising of a scheme whereby sufficient quantities of all items necessary, say, for the erection of a complete aeroplane are ready for use, without delay, by the erecting shop workers.

It is futile to expect an adequate, or even reasonable, output of complete aeroplanes if the workmen are constantly held up for parts. The strength of a chain is in its weakest link: the weakest link being represented in aircraft by the missing part—be it a complete engine or a simple bolt—which temporarily arrests the progression towards the completed machine.

Standardisation.

Much has been heard in recent years of "standardisation," which, after all, only means the simplification of production and labour whereby each member of a particular shop becomes expert in producing the item for which he is responsible and in such quantities as will adequately meet the constant demands of other departments. Concerning aircraft manufacture it may be contended against this that the quantity of any particular type of aeroplane called for is not sufficient to enable the manufacturers to follow the beaten track of the widely advertised American motor-car manufacturers.

But this is true only in a limited sense, as it is a well-known fact that in American Aircraft circles of the present time the slogan is "standardise"! Despite the much-abhorred modifications it is still possible for manufacturers to produce aircraft on similar lines to those firms which were producing motor-cars in England during the two years preceding the war, although it must be admitted that in these days one of the difficulties which beset the manufacturer is the class of labour which is available.

Component Making.

It will be found that in many respects piano-forte manufacturers, cabinet makers, joiners and shopfitters who have turned their energies to the manufacture of aircraft components are making a better show of *pro rata* output than even the chief factories which, in the majority of cases, are keeping these smaller firms supplied with orders in the way of main planes and other components. The reason for this is obvious. The fittings required are usually very small, and, in many cases, can be obtained from stock, which enables the small firms to have a constant flow of the same component through their shops, and they are not worried by the hundred and one hindrances which constantly beset the real aeroplane builder.

Although these conditions rule, there is no reason why it should be so. In the first place, firms upon which the country is relying should be under the control of live men, not necessarily of the "hustling" type but those who can take a long-sighted view of their works' capacities, and who can see, and remedy, the weak spots which are bound to appear from time to time. Incredible as it may seem, there are now large factories running whose output and increase of output (if any) is the result more of chance than of careful and practical foresight, and, were the majority of the aircraft factories of to-day cut off from Government orders and left to fight in a competitive world, many of them would very shortly be unable to carry on successfully.

Sectioning Out.

Concerning the method of balance in production we might very well take a leaf from our American cousins' book. The usual procedure adopted is that the main factories are sectioned out as a draught board, the number and size of each section being in accordance with the capacity of the factory. Commencing with the engineering shop, each section here is controlled by a capable charge-hand, who is responsible for the production of a certain number of fittings required per week to cover the machines arranged for.

Other charge-hands are responsible for other sections in the shop, and it is for them to see that they are allotted the labour necessary for the completion of their required weekly output. The shop superintendent is in personal touch with each of the charge-hands and by records furnished to him is enabled to check the progress made by each section.

A similar method is adopted for the mill and woodworking shops. The final erecting shop is also sub-divided, but obviously into larger sections. The charge-hand of each section in many cases is responsible for the assembling of between five and ten machines which are on the floor at any one time.

By this method it will be seen that an excellent check is obtained in comparing the output of the various sections. There are, of course, almost certain to be occasional hold-ups, either through machines breaking down or temporary shortage of raw material, but, in such an event, the erecting shop would not be affected to a great extent, as there would be a three weeks' stock of parts kept in store, which would enable the section affected to pull up when normal conditions are re-established.

It will be seen that the stores from the commencement of any contract are automatically kept with sufficient supplies for the erection programme to be kept going for three weeks should the supply of any part cease during this time. By this method of sectionising the factory, temporary breakdowns in any section are immediately detected and more easily remedied.

The Progress Department.

The Progress Department is a most necessary branch of a fully equipped aircraft factory. Varied divergent ideas exist concerning the functions of such a department. Primarily, its object should be that of an Intelligence Department, and it should be in a position to give immediate information regarding the position or condition of work in each and every shop, periodically bringing to the notice of the management points which need attention.

It is for the Progress Department to keep all productive sections equalised, and to issue weekly or bi-weekly statements to each of the general shop foremen enabling them to see at a glance the results to date of work produced by the charge-hands under them, and thus be able to obtain an accurate general survey of the whole of the work passing through the shops. Copies of these records should also be constantly scrutinised by the works manager.

The Progress Department, moreover, should be in constant touch with the stores, keeping check on all general raw material under the system of the maximum and minimum stocks, advising the storekeeper when supplies are required, who will in turn acquaint the Purchase Department that further quantities should be requisitioned.

As previously mentioned, if the works are laid out on this sectional system the stock of fittings should not fluctuate greatly. As an additional check the Progress Department should carry the system of minimum and maximum stocks of completed articles into effect, in the same way as with raw materials.

Practical Work for Practical Men.

It should be borne in mind that the general foremen and the charge-hands should be given as little clerical work as possible. So often a visitor to various shops will find the works superintendent busily engaged in his office with pen and paper instead of devoting his energies to supervising the actual work.

If the Aircraft Industry is to make successful headway in the future and become a practical commercial proposition, as it no doubt can, now is the time for the Aircraft Factories to put into operation a systematic plan so that now the war is over, whatever is decided to be undertaken, will have the advantage of a thorough organisation and system already in practice both as regards production and cost.

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PROGRESS IN ROLLS-ROYCE ENGINES.

Striking illustrations of the extent to which pre-war motor-car factories have been reorganised and, indeed, reconstructed to meet the nation's aviation requirements may be seen in any of the large works to-day. The larger the works before the war the greater the amount of change that is generally to be seen there, and it is doubtful if in any other case the change is better exemplified than in the Derby works of Rolls-Royce, Ltd.

A recent tour through this vast establishment with its 8,000 odd hands revealed not a single car or car component in course of construction. Everything is devoted to the specialised manufacture of the famous Rolls aero-engines mainly of the Falcon and Eagle series. The whole resources of the factory are devoted day and night to the turning out of the engines which have added lustre to a name already possessed of an enviably unique reputation. From the earliest days of the war the Rolls-Royce concern has been engaged in the manufacture of those engines which have made successful our Handley Page bombers and Bristol Fighters, to which is due not a little of the credit for our aerial reputation.

It was one of their first engines that supplied power for the F.E.2d biplane which fell into the hands of the Hun away back in 1916. The Derby people must have felt more than merely "sick" with the "competent authority" who sent a pilot who had never before been to France to deliver the first of a type of machine and engine that was to do such wonders. They must have felt even more excited when they learnt that the first-fruits of their many months' labour had been delivered free into the hands of the enemy, and that what they and the aeroplane builders had guarded as a precious secret was serving the Hun as a priceless object-lesson. But why support Government departments at all if they are not to be allowed to negative the fruits of the private manufacturers' enterprise?

Increasing Power.

As an example of the progress made in engine design in the last few years, the power output figures of the two best-known Rolls' engines would take some beating. In February, 1916, the power of the Hawk engine was 91 h.p., and in October, 1918, this had been increased to 105—at 1500 r.p.m.—and with no increase in the capacity or cubical content.

With the larger Eagle engine the figures are far more striking. In its earliest days the power of this engine was 266 h.p., while in February, 1918, the output had been increased to 360—again with no increase in capacity.

Of this latter engine the following particulars may be of interest. The bore and stroke are $4\frac{1}{2}$ and $6\frac{1}{2}$ ins. respectively; the engine is of the well-known 12-cylinder Vee type and has four magnetos and four carburetters. It is water-cooled and has overhead valves—two per cylinder.

A good general idea of its arrangement is provided by the accompanying photograph, which shows clearly two of the four carburetters (they are placed in pairs at each end of the cylinder Vee) and three of the four magnetos, all four of which are at the far end of the crankshaft from the airscrew.

To say that the Rolls' engines are good engines would be a remark embodying the quintessence of pleonasm, and to avoid the appearance of overdoing things one cannot do better than simply reiterate that they are Rolls-Royce.

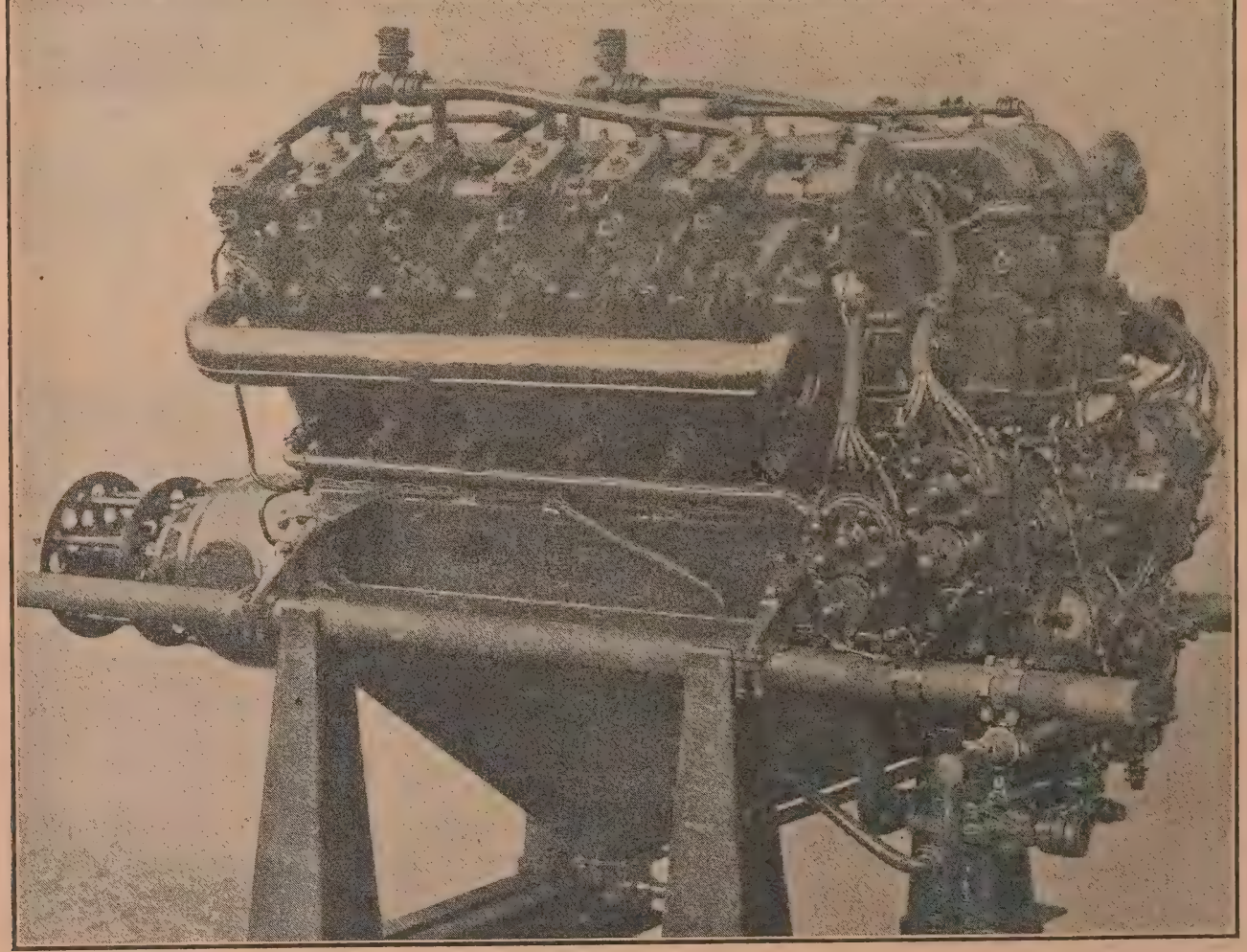
It is a pity that the latest product of the factory—the 600 h.p. Condor—will not get its chance in a fighting or war machine, for its tests have proved it to be as promising as any design yet produced, and have gone a long way towards showing that an increase in power similar to that obtained from the other engines may be expected. It is of the same type as the Eagle, but of a larger size, and has four valves per cylinder as compared with the other engine's two.

As to the Rolls-Royce post-war programme, little can be said at present. The factory is still fully engaged on the production of aero-engines, and every indication would point to the probability that aero-engines are to form an important item in ultimate activities. This, however, it must be understood, is no more than an opinion.

A POSSIBLE PETROL SUBSTITUTE.

It is of interest to note that Mr. J. Penhale, of Johannesburg, South Africa, has invented a substitute for petrol, which is named Penrol. It is stated to be cheaper than petrol both in price and results.

Penrol is obtained by dissolving pure acetyline gas in pure alcohol to saturation point, and adding 0.3 per cent. of acrolein.



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THE PATENTS INDEX.

The subjoined list of recent inventions has been specially compiled by The Aeroplane from the current Official Patents Records :—

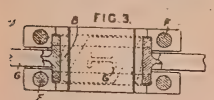
Descop, P. Aerial machines. No. 19986. Dec. 3rd.
Dodson, E. Operating altitude control-devices on carburetters. No. 20300. Dec. 6th.
Fessenden, R. A. Locating submarines, aeroplanes, etc. No. 19694. Nov. 28th.
Grimwood, E. Airship and balloon safety anchor. No. 19881. Dec. 2nd.
Hamilton, C. H. Aeroplane wings. No. 20105. Dec. 4th.
Lesseps, P. de. Means for actuating ailerons of aeroplanes. No. 20138. Dec. 5th.
Lines, A. W. D. Landing brakes for aeroplanes. No. 20278. Dec. 6th.
McConnal, J. C. Hangars. No. 20262. Dec. 6th.
McConnell, R. S. Wind-speed and course indicators for aircraft. No. 20035. Dec. 4th.
Meech, A. A. Turnbuckles or strainers for tension of aeroplanes, etc. No. 20327. Dec. 7th.
Sayers, W. B. Aerodynamic relays for operating control units of aircraft, etc. No. 19894. Dec. 2nd.
Spencer, M. H. Cases for parachutes. No. 20113. Dec. 4th.
Tunmer, G. N. Parachutes. No. 20001. Dec. 3rd.
Walther, H. Sighting-devices for anti-aircraft guns, etc. No. 19889. Dec. 2nd.
Williams, E. T. Landing places for aircraft. No. 20112. Dec. 4th.
Wimperis, H. E. Containers for conveying articles dropped from aircraft. No. 19867. Dec. 2nd.
Wolseley Motors, Ltd. Mounting and driving aircraft propellers. No. 20232. Dec. 2nd.
Wylie, H. N. Construction of tubes and aeroplane struts, etc. No. 20215. Dec. 5th.

Complete Specifications Accepted, Prints of which can be Obtained on and after Dec. 30th, 1918..

120,939. Aug. 18th, 1917. Blackburn Aeroplane and Motor Co., and Wilson, S. Appliances for the manufacture of propellers, particularly applicable for use on aircraft.
120,942. March 6th, 1918. Rowles, S. G. Clinometers for aircraft, submarines, and the like.
120,943. Oct. 24th, 1917. Fox, H. Wilson. Aircraft.
120,991. Dec. 5th, 1917. Walker, F. T. Built-up box girders of wood.
121,006. Dec. 21st, 1917. Tavener, C. W., and Mooney, D. J. Metal spars for aircraft.
121,020. Jan. 18th, 1918. Moston, J. Aircraft.
121,045. Feb. 28th, 1918. Ennison, R. H. Darts for the use of aviators.
121,056. March 19th, 1918. Hyatt, N. L., and Lloyd, H. M. Aeroplane propelling devices.
121,072. April 25th, 1918. Wilson, W. A. Aeroplanes, hydro-aeroplanes, and other aerial craft.

Abridgments of Recently Published Specifications.

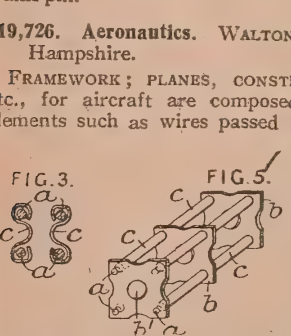
119,685. Connecting-rods. Ricardo, H. R., 21 Suffolk Street, Pall Mall, London.



In a radial-cylinder internal-combustion engine, the connecting-rods G are formed with curved shoes which engage under in-turned flanges on a bush B surrounding the crank-pin. The bush B is in two semi-cylindrical parts secured together by bolts F. A soft-metal lining may be interposed between the bush and the crank-pin.

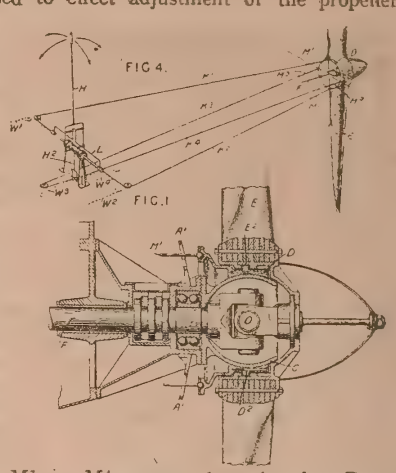
119,726. Aeronautics. Walton, F., Harford House, Beaulieu, Hampshire.

Framework; planes, construction of.—Struts, spars, ribs, etc., for aircraft are composed of a series of flexible tension elements such as wires passed through spacing-blocks which are separated by tubular compression elements fitted to the tension elements. Fig. 5 shows a structure composed of wires *a* threaded through plates *b* which are separated by tubular members *c* arranged on the wires. The compression members *c* are preferably shaped as shown in Fig. 3. The whole may be clamped together by nuts on the ends of the wires *a*. The plates *b* may be of metal, wood, fibre, etc., and the members *c* of bamboo, sheet metal, wood, etc. A wooden rod may be passed through holes b^1 in the plates *b*. The plates *b* may be corrugated or provided with web-like members. In a modification, longitudinal strips of metal may be secured together by bolts or rods with tubular spacing-pieces fitted on the bolts.



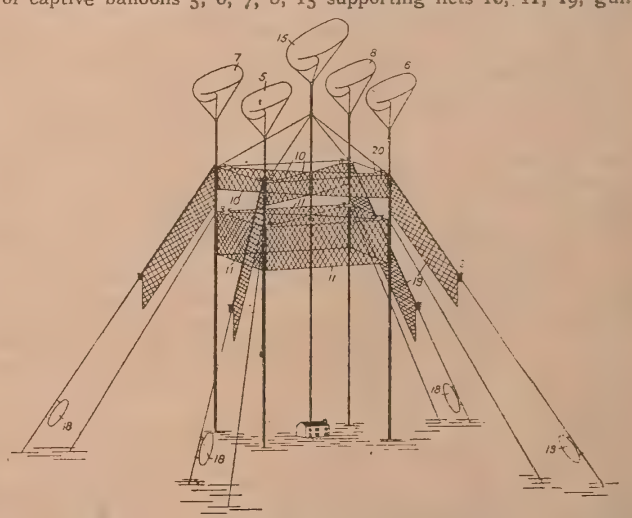
119,707. Aeronautics. Carson, J. H., and Wade, G. H., B.E.F., France.

Steering and Balancing.—The gyroscopic action of an aeroplane propeller is utilised to effect adjustment of the propeller axis in any direction, a couple being applied to the propeller so as to cause it to precess into the desired direction. The elevator or ailerons may be adjusted simultaneously with the propeller. Fig. 1 shows a propeller E rotatably mounted on a ring D which may be adjusted in any direction on a fixed part - spherical member C. The propeller shaft F is provided with a universal joint O, and the forces applied to the ring D are conveyed to the propeller by means of a rib-and-groove connection D^2, E^2. Rods M^1 . . M^4 connected to the ring D are attached to cables K^1 . . K^4 leading to the control lever H. The rods M^1 . . M^4 are passed through radial slots in brackets A^1, so as to prevent rotation of the ring D. Fore-and-aft thrusts applied to the control lever H are transmitted to the ring D by means of an extension H^2 and the cables K^3, K^4, which thereby apply a couple to the propeller causing it to precess about a transverse axis. Similarly, lateral pressure applied to the lever H is transmitted by means of a yoke L and the cables K^1, K^2 to cause the propeller to precess about a vertical axis. Connections W^1 . . W^4 may lead to the elevators and ailerons. In modifications, the engine is mounted so as to be adjusted with the propeller. Specification 12286/09 is referred to.



119,796. Aerial warfare. Aner, M. A., 8, Bridgewater Street, Liverpool.

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AN AIRCRAFT DANCE.

On Friday, Dec. 13th, the London Aircraft Company gave a dance at the Holborn Hall in aid of its Football Fund. Fancy dress was optional. Twelve prizes in all were given, six in open competition and six to employees of the L.A.C. The dance commenced at 6.30, and, with an interval for refreshments, finished at 10.30. Mr. F. Allen, proprietor, who gave the prizes, was present. Mr. J. J. Marsh, the general manager, was also there. Thirty wounded soldiers from Grovelands Auxiliary V.A.D. Hospital, Southgate, went as guests, and obviously enjoyed themselves thoroughly.

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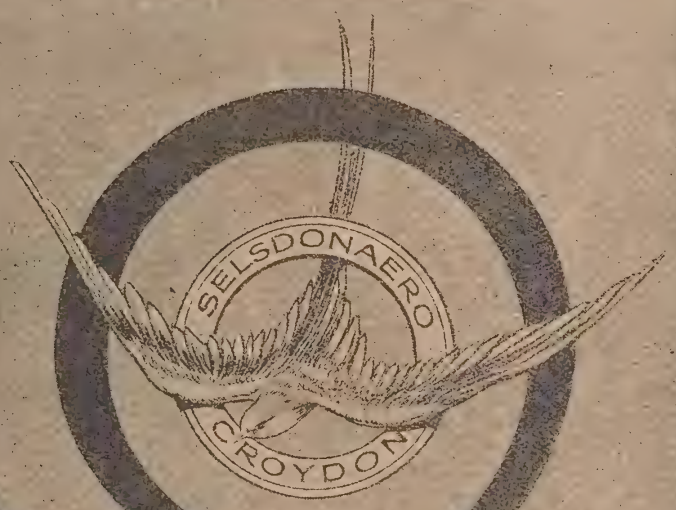
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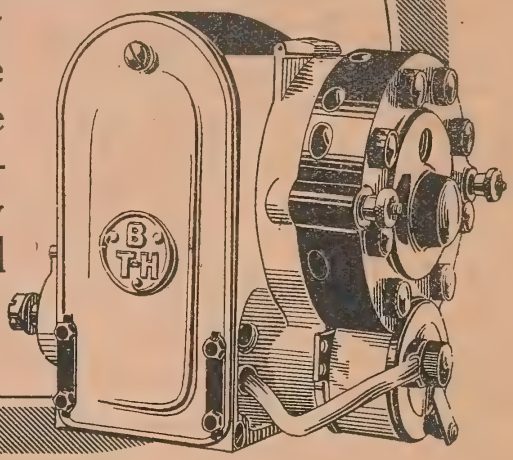
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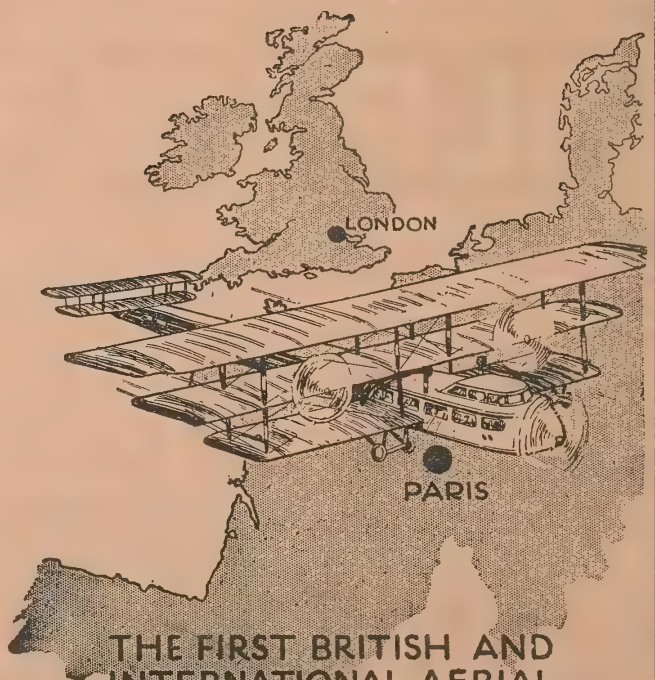


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Armstrong, Sir W., Whitworth & Co., Ltd., Newcastle - on - Tyne "Armstrong Aviation, Newcastle-on-Tyne." Gosforth 500.

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The Supermarine Aviation Works, Ltd., Southampton. "Supermarin." Woolston 37 (2 lines).

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White, J. Samuel, & Co., Ltd., East Cowes. "White, East Cowes." Cowes 3.

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Bearings (Etonia Cast Phosphor Bronze)

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Yorkshire Engineering Supplies, Ltd., Wortley, Leeds. "Yes, Leeds." Central 3927.

Blinds—

J. Avery & Co., 81, Gt. Portland Street, London, W. "Velarium, London." Gerrard 6620

Blowpipes (Oxy-Acetylene)—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma, Vic, London." Vic. 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Vic. 3540 (3 lines).

Books (Aero Engines).

Dykes' Auto Encyclopedia, Gillam Dome Buildings, Richmond, Surrey

Buildings—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Palmer, T. W., & Co., Church Road, Merton Abbey, Surrey. Wimbledon 1313

Rubery, Owen, & Co, Darlaston, South Staffs.

Cable Coverings and Cable Controls—

The Bowden Brake Co., Ltd., Tyseley, Birmingham. "Bowden, Acock's Green." Acock's Green 103 & 104.

Bowden Wire, Ltd., Willesden Junction, "Bowirelim, Harles, London." Willesden 2400 (3 lines)

Herbert Terry & Sons, Ltd., Redditch "Springs, Redditch." Redditch 61.

Carburettors—

Hobson, H. M., Ltd., 29, Vauxhall Bridge Road, S.W.2. Victoria 4670

Casein—

T. M. Duché & Sons, 6, Eastcheap. "Duché, London." Avenue 2096.

Nieuwhof, Surie & Co., Ltd., 5, Lloyds Avenue, London, E.C 3. "Suricodon, Fen, London." Avenue 34 and 35

Celluloid (Non-Flam.)—

Greenhill & Sons, 8, Water Lane, E.C. "Greenberg, London." Central 1306-7.

Clothing—

Burberry's, Ltd., Haymarket, S.W.1. Regent 2165.

Dunhill's, Ltd, Euston Road, N.W.1. "Dunsend, London." North 3405-6

Component Parts—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (4 lines).

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Central Aircraft Co., High Road, Kilburn, N.W.6 "Aviduction, Phone, London." Hampstead 4403 & 4404.

P.D.V. Aircraft Co., Ltd., Princes Street, Richmond. "Aeros, Richmond" Richmond 1681.

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Thompson Bros (Bilston), Ltd, Bradley, Bilston, England "Thompson Bros., Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co, 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Dopes—

Titanine, Ltd., 175, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312

British Cellulose Co, 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Robt. Ingham Clark & Co, Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Beardmore Aero Eng, Ltd, 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne Hammersmith Hammersmith 1910.

Napier & Son, D., Ltd. 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd, Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co, Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Belling & Co., Montague Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Euston Road, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24X.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd, 117, Cleveland Street, London, W. "Installing, Euston Road." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London" Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.

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Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Bececolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Meudine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast"
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17 "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham" Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4 "Reconciled, Cannon, London." City 6212.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4059.
Aircraft Supplies Co., Ltd., Ascol House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Metal Parts and Fittings (continued)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 2207.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton 1041.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Lt., Lifford, Birmingham. "Fremo, Birmingham." King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Smercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Smercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2400.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2 "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemal.vo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hydc, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil." Yeovil 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Letchworth 26. Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Willesden 2480. Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham," Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London" Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

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"The Aeroplane" Buyers' Guide.—*continued.*

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Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Solder Manufacturers—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled Cannon, London." City 6342.

Sparking Plugs—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Lodge Sparking Plug Co., Ltd, Rugby. "Igniter, Rugby." Rugby 235.

Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of KLG Plugs. "Kaclgee, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—

Brown, R. F. & F. W., Wollaton, near Nottingham. Nottingham 1526.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles—

Staffs.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Rubery Owen & Co., Darlaston, South

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines).

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Thomas Parsons & Sons, 315 and 317, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S W 19 "Harland, Wimbledon 45." Wimbledon 45 and 1395.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers—

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Avenue. 1432. Redditch 61.

Watchmakers and Jewellers—

(Silver Models)—

Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines).

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—

Barimar, Ltd., 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—

Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.

Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.

Wadkin & Co., Leicester. "Woodworker, Leicester." Leicester 3614.



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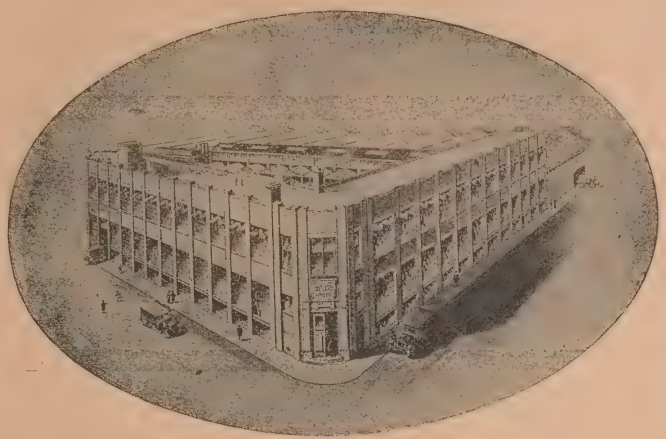
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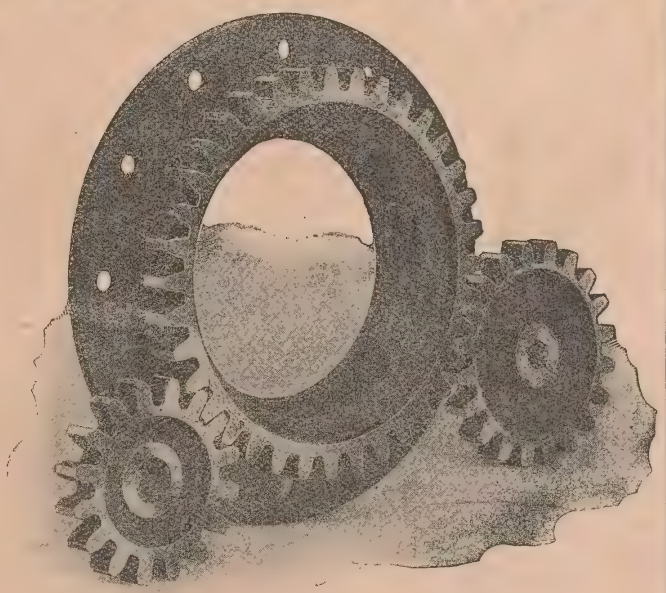
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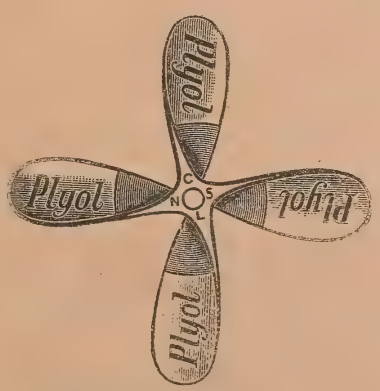
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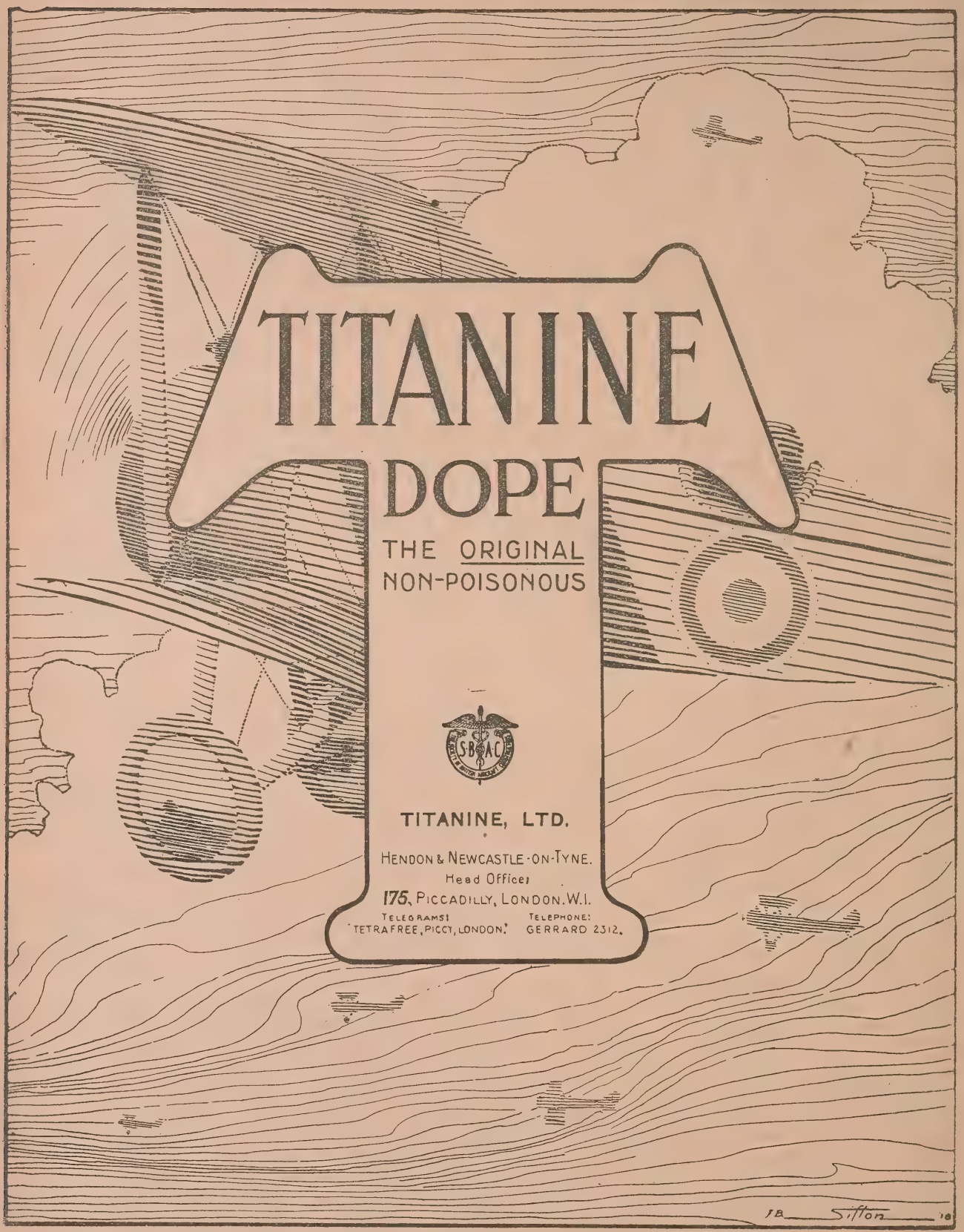
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COMMERCIAL AERONAUTICS

FLYING IN SOUTH AFRICA.

By L. Howard Flanders.

Now that the war is drawing to an end we may turn our attention to the advantages of Aviation when applied to peaceful purposes. The war has been a forcing ground for Aeronautics, and in the past four years the science has advanced so rapidly that we now know as much as we should have learnt in 15 or 20 years under pre-war conditions.

The first and most vital asset which accrues to the world from Aviation is rapid transport of passengers and mails. In England we have well-organised railways and roads which permit of rapid and economical transport, but in other parts of the world transport is slow and expensive. Consequently, it is in such parts that Aviation will have its greatest value.

South Africa's Railways.

One such place is the Union of South Africa, in which country of immense distances and small, but wealthy, population, the railways are handicapped by narrow gauge, difficult country, and the conditions under which they were built. These railways were laid by contract at a certain price per mile of line laid, hence the contractors made neither bridges, tunnels, nor high embankments.

The railways follow the contour lines of the hills and mountains, winding in and out of the country like a snake, so much so that it often seems possible to shake hands with the engine-driver from a compartment in the rear of the train. The grades are steep, 1 in 40 being common, hence the journeys are slow and tedious. The soil is such that the dust is often unbearable, and even the luxurious accommodation provided does not make travelling bearable.

The first-class fare is based on 3d. per mile, though substantial reductions are made on long distances.

The population is wealthy and business is keen, hence time is of value there just as here in London.

Climate.

The climate is very suitable for South Africa to be the first country to have an Air Service on a large scale.

Over the whole area high winds are rare, and destructive cyclones or hurricanes are unknown.

The air is very clear and immense distances can be seen, which is a great advantage, especially for night flying, in which one light every fifty miles would suffice to guide the pilot.

Heavy clouds and rain are infrequent, and the climate has settled and definite seasons, hence the rapid variations to which we are familiar need not be feared.

Over a considerable portion of the air routes the rainfall is only 10 inches per year, and an average of all the routes shows about 20 inches of rain, with 80 cloudy days a year.

Cloudless days and a clear still atmosphere is the rule during the winter months, for, with the exception of the extreme south of Cape Colony, the wet season occurs in summer.

The mean altitude of the ground over which the service would ply is from 2,000 ft. to 4,000 ft. above sea-level, hence most of the flying could be done at from 5,000 to 8,000 ft., which makes for petrol economy.

Natural Wealth.

This Colony has, perhaps, the brightest future of any. The mineral wealth is well known, and includes amongst the great variety of minerals so far discovered shale oil and petroleum, as well as iron, coal, copper, tin, and, of course, all the precious metals.

There is every prospect that this Colony will become the chief manufacturing centre of the world, for nowhere else is there found such great variety of mineral wealth coupled with excellent climate; it is in every way a favoured spot for the engineer

Alcohol is produced in considerable quantities, and some of the brands give good starting and more power than petrol when used in standard motor-car engines, with, however, the drawback of considerably increased consumption.

An Initial Aeroplane Service.

A complete service which shows a handsome profit may be started with six aeroplanes.

The best type of aeroplane would be one of medium size, having two engines of about 350 h.p. It is probably contrary to Dora's many rules and regulations to talk much about engines just now, but there is a well-tried and popular engine, which comes from the home of the "Fliver," which will without doubt be available at a moderate price later on.

It is not too much to ask from a modern aeroplane to fix the useful load at 18 12-stone passengers, with a luggage allowance of 40 lbs. per passenger, 200 lbs. of mails, 2 pilots, or pilot and mechanic, and 4½ hours' fuel and oil.

The length of a single flight should be less than 4 hours in order to keep the paying load as large as possible.

Inducements.

The present postal rate is 1d. per ½ oz., and when the great saving of time is considered there is no doubt that no one would grudge an extra 1d. stamp.

The time for the journey between Cape Town and Bulawayo is 22 hours by air, 58 hours by the weekly mail express, and, of course, much slower on other days, a saving of 36 hours.

Again, between Durban and Kimberley the times are 5½ hours by air, 41 by rail, a saving of 35½ hours.

Aerodromes.

The cost of aerodromes would not be high, as in most places land rented at quite a moderate sum per annum should provide a sufficiently large aerodrome, when the value of the pasture for feeding cattle is taken into account.

As the Union is, on the whole, very progressive, in most towns the aerodrome would be provided free of charge by the municipality by permitting the use of the racecourse or other public land.

Headquarters.

None of the native timbers are suitable for aeroplane construction, though the climate is suitable for growing good spruce in some parts of the Union. It follows that all spare parts must be imported, and to facilitate this the headquarters must be situated at Cape Town, since it is the nearest port to London or New York.

Owing to the restricted railway accommodation, it would not be a practical proposition to carry all the parts to a more central town.

Another consideration for making Cape Town the centre for business, erecting, and repairs is the fact that the cost of living and wages is lower than at most other parts of the Union.

To the west of Cape Town there is suitable land for all requirements.

The First Service.

The first section for the service would be Cape to Kimberley, about 525 air miles. A halt may be made at Beaufort West, a small farming town of about 5,500 inhabitants, or at De Aar, a very small town, but an important railway junction where the rail branches for Port Elizabeth to the east, and the South-West Protectorate.

Kimberley (population 50,000), the terminus of this section, is well known as an important mining centre. There are daily two through trains each way, which take over 30 hours, and once a week a mail train, which is speeded up to 28 hours. The time by air, allowing for halts, is 8 hours.

Throughout this article a liberal allowance is made for adverse winds, so the times may be taken as the maximum likely to occur even in bad weather.

Sub-Services.

Kimberley would make a centre for several sections which should have their terminus here.

Firstly, Kimberley to Johannesburg, connecting with the Cape Town service. This service would take about 4 hours, thus reducing the total time of Cape Town to Johannesburg from 45 hours by rail (36 hours by weekly mail train) to 12 hours—a very great saving of time (33 hours).

Secondly, a service Kimberley to Durban, calling at Bloemfontein, reducing the time from 41 hours by rail to 5½ hours by air, a saving of 36½ hours.

This service would alternate with one to East London and Port Elizabeth, as required; and, as the South-West Protectorate (formerly German South-West Africa) opens up, a service to Windhuk or Swakopmund will be required.

When conditions of life in this part settle down there will, doubtless, be a considerable influx of settlers. The railways in the Protectorate are chiefly 2 ft. gauge, which, with the break of gauge from the Union, 3 ft. 6 ins. cannot give good service. Windhuk would then be 18 hours from Cape Town.

The Inland Centre

Johannesburg, with a population of over a quarter of a million,

makes a centre for a service to Rhodesia and Natal. Johannesburg to Bulawayo by air is about 440 miles, which would take 6½ hours, allowing for a halt at Pretoria, and from Bulawayo to Salisbury a further 3¼ hours. This would do much to link up this distant territory with other parts of the Empire.

This service brings Bulawayo to within 18½ hours of Cape Town, instead of 58 hours by the weekly mail express, a saving of 39½ hours if one section is flown by night, or 27½ hours if the night is spent in a comfortable hotel at Johannesburg.

And, which is even more important, it saves the heat and dust of this long journey which is so severe that many people sail from Cape Town round the stormy coast to Beira, and thence go by rail through Portuguese East Africa, an expensive journey, taking over a week.

Hence an air service will be a great boon to Rhodesians.

A PLEASURE SERVICE.

The service from Johannesburg to Durban three days a week in summer and every day in winter would be a most profitable section, so many of the inhabitants of the cold high country of the Transvaal go down to the warm climate of Durban for the winter, where the sky is cloudless and the temperature like an English summer day for five consecutive months. Durban has the finest winter climate of any seaside resort in the world.

Thus the Air Service would commence by serving Cape Town, Kimberley, and Johannesburg daily, Durban four days a week, Port Elizabeth, East London, Bulawayo, and Salisbury once a week, with halts at Bloemfontein, Beaufort West, Pretoria, and Pietermaritzburg, which, with a more frequent service in winter, makes a total of over 800,000 miles a year.

AERIAL EXCURSIONS.

A profitable source of income will be excursions. Race meetings are largely attended, and for people who have limited time a race special would be very attractive.

Also the Victoria Falls have a great fascination, as witness the many cheap excursions; but these excursions take about ten to fifteen days at a cost of £22 upwards. Many passengers from Australia to England would like to leave the ship at Durban, where coal is taken in, and meet her again at Cape Town, which only allows five or six days; hence a visit to the Falls by rail is impossible.

Parties could frequently order a special aeroplane by wireless to start immediately on arriving at Durban and be in Cape Town in four or five days, including a day at the Falls and a short time to see the sights at various towns. Such tours, with a conductor, and full load of passengers at £22 per head would show a clear profit of £200 per trip.

THE STOCK-IN-TRADE.

Five aeroplanes in service and one or two in reserve with a good stock of engine spares would maintain this service. Taking into account all cost of renewals, depreciation, salaries and wages (allowing for the high rates which obtain in some localities), rent, motor-car transport, fuel, oil, and all charges, the service can be maintained at 2s. 3d. per mile flown on the above annual mileage.

The earnings of the aeroplanes will be from 3s. 3d. to 4s. 6d. per mile, dependent on the subsidy for carrying mails, parcels, and the percentage of full loads, so taking a fairly low figure for the earnings a profit of £50,000 per annum is assured.

RUNNING COSTS.

The cost of maintaining an Air Service is very low per mile when the high speed is taken into consideration. An ordinary motor omnibus service in England costs 10d. to 1s. per mile, and at South African prices would cost 1s. 6d. to 2s. per mile, according to the district.

In working out these figures I have assumed the aeroplane to be a modified or rebuilt war type. A specially built commercial machine would carry a heavier load and earn more per mile.

Probably, machines carrying 24 lbs. per h.p. will give sufficient climb and speed, and such machines would carry at least 2,000 lbs. more load, either as 12 more passengers or mails and parcels, without increasing the running costs in any way except, perhaps, a small increase in first cost.

I have assumed that a ground speed of 70 m.p.h. is maintained as an average, thus holding a large margin for adverse winds.

This service as set out is just a skeleton to commence with, and would soon be doubled, as the advantages of an organised air service becomes appreciated. Naturally, the advantage that travel by air offers when the route lies through unhealthy country, and the fact that the passengers change the dust, heat, flies, mosquitos, and jolting of the train for smooth, cool and comfortable travelling will prove a great attraction.

As the service is increased the cost of maintenance would be greatly diminished pro rata.

CAPE TO CAIRO.

This is a logical extension of the South African scheme.

Cape Town to Salisbury would be as above; from there the route would be:—Fort Jameson, Niakolo on Lake Tanganyika, Kigoma on the Lake and the railway from Dar-es-Salaam, Muanza on Lake Victoria Nyanza, Port Florence on the Lake and the railway from Mombassa, Lado, which is served by steamers up the Nile, as also are the remaining halts:—Kodok (Fashoda), Khartoum, Abu Hamed, Assuan, Cairo.

All these halts are a reasonable distance apart, and petrol can be carried by rail and water to all halts except Fort Jameson.

The total time, including half hour at each halt for filling tanks or changing aeroplanes, is 61 hours, or the whole journey from Cape Town about 8⅓ hours, which would bring the journey from London to Cape Town down to a matter of 4½ days.

But Cape to Cairo is some years ahead of us just now.

CIVIL AERIAL TRANSPORT.

GREAT BRITAIN.

It is understood that Mr. Handley Page is considering the manufacture of a machine of 5,000 h.p. for commercial purposes.

The Newcastle Council on Dec. 4th received a letter from Armstrong, Whitworth and Co., Ltd., stating there was a probability that on the conclusion of peace the Government would establish a passenger and mail service with the Continent.

First-class landing stages would be needed, and Newcastle would probably be required to provide accommodation commensurate with the importance of the city. If that were so, the firm, whose aerodrome on the town moor would be eminently suitable for the purpose, would be glad of an opportunity of organising and administering the scheme.

The letter was referred to the Parliamentary Committee.

UNITED STATES OF AMERICA.

It is a notable fact that, whilst the majority of countries are harbouring a great deal of discussion as regards the establishment of air-lines all over the world, the U.S.A. is becoming more and more advanced in the practical part of this innovation every day. Any who contemplate creating aerial services must realise that only one route should be started at first, and when that is put into good running order, other routes can be added.

It is evident that the Aerial Mail Division of the U.S. Post Office Department well understand this fact, and, what is more, are acting up to it. The route which they are running regularly is that between Washington and New York, but a trial flight was made from New York to Chicago, via Cleveland, which proved quite successful. Therefore, a daily service is to be established as soon as hangars and equipment can be transported to the landing grounds, for which the necessary plans are practically completed.

It is of interest to note that the U.S. Post Office Department are contemplating the establishment of trans-continental air lines, for the purpose of carrying mail. It is expected that the journeys between New York and San Francisco, Boston and Seattle, Philadelphia and Santa Barbara and Washington or Charleston and Los Angeles or San Diego, will be covered by relays of aeroplanes within 18 hours of daylight.

Should the journey be covered in the time estimated, the Aerial Mail Service will compare very favourably with the train-service, which takes at least three days to cover the distance between the Atlantic and the Pacific Ocean right across the continent.

ITALY.

A triplane, of large dimensions and new type, is just being completed at the Caproni works, on the outskirts of Milan. This machine is said to be destined for Transatlantic service, and is, therefore, being fitted with dining and sleeping cars. It is expected that 100 passengers will be carried under modern conditions of comfort. President Wilson may inspect the triplane during his visit to Italy, after which the maiden flight to the U.S.A. will be attempted.

Besides this machine, another triplane is in course of construction. It has been specially designed for the conveyance of mails and newspapers. A third type of aeroplane is being built by this company, which, it is hoped, will be employed in transport service over the ancient caravan routes of the Asiatic and African continents.

Mr. Henry A. Wise Wood, chairman of the Transatlantic Flight Committee of the Aero Club of America, stated recently that Signor Gianni Caproni was considering the construction of a machine powered by engines developing 18,000 h.p. It would be interesting to learn if the idea has materialised, and if the machine mentioned above is the result.

GERMANY.

The carriage of passengers and mails by aeroplane between some of the large German towns began on Dec. 7th. The passenger fare is 2½ marks per kilometre (about 4s. per mile). The machines used have a speed of about 80 miles an hour; therefore, the journey from Berlin to Munich, Cologne, or Konigsberg will take about 4½ hours.

It is reported that the Schutte-Lanz Company, who formerly confined themselves to airships, are constructing an aeroplane capable of carrying 40 passengers.

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IMMEDIATE VACANCIES FOR 60 PUPILS

MACHINES AND PILOTS ALWAYS AVAILABLE FOR PASSENGER FLIGHTS

KINDLY MENTION "THE AERCFLANE" WHEN CORRESPONDING WITH ADVFPTISERS.

MR. SOPWITH'S VIEWS ON COMMERCIAL FLYING.

The post-war policy of the Sopwith Aviation Company appears to be a judicious compound of caution and enterprise. The class of machine in which this firm has made its name is not that which is by any means obviously adapted to commercial aviation. To change over from the fighting scout type to the heavy aerial carrier would mean almost as big a revolution as a change to some totally different branch of engineering.

A Sopwith Performance.

At the luncheon given recently at Kingston, it was stated that the newest type of Sopwith "Snipe" with A.B.C. engine, attains the immense speed of 156 miles per hour and can climb ten thousand feet in four and a half minutes with full war load and two guns. This is the kind of proposition that will be intensely interesting to the man who takes up flying as a sport, but will not appeal particularly to the more solid type of commercial enterprise involving the carriage of passengers and goods. With the exception of sport and racing, the only chance for such a machine appears to be in the carriage of express mails, of such a kind that every hour saved justifies the payment of a considerably higher charge for carriage.

A Prospective Sopwith Motor-Cycle.

Taking all these circumstances into account, it is not surprising to learn that the Sopwith Company, while remaining in the main an aviation company, will devote a very considerable proportion of its works to the production of a high-grade motor-cycle to the design of Mr. Bradshaw, of the A.B.C. Company, the two firms collaborating under a working agreement. The best judges are of the opinion that there is an immense future for a highly standardised, good class motor-cycle of moderate power, produced in big quantities. The home market will take a lot of filling, and the Oversea markets are immeasurable.

Commercial Aeronautics.

We are, however, drifting away from the point. Mr. Sopwith was asked at this Press luncheon to give his views on commercial aviation. Briefly, his opinion is that it is bound to come, but that it will not come with the rapidity that optimists would like to expect. The aeroplane can certainly claim excellence in the matter of speed and a very high standard in the matter of reliability, while the danger of aerial travel is now only slight.

The one big question, in Mr. Sopwith's opinion, is the influence of weather, and here he does not refer to wind, but to fog, which he regards as the only really serious obstacle. He argues that, if you run a service you must run it regularly, and that in this country fog and mist are more or less prevalent for some months in the year. Therefore, IN THIS COUNTRY, the growth of commercial aviation must be gradual and even tentative.

The Testing of Aerial Services.

I have deliberately repeated the words "in this country." They bear out the contention which I have been endeavouring to hammer home for months past, that the proper testing ground for commercial aerial services is not to be found in the British Isles, or, for that matter, in the running of trips between Paris and London.

Pleasure trips of the latter kind are good educational stuff. An all-the-year-round service would be quite another thing. I am inclined to think that if the London to Paris service were, so to speak, stuck up for a sample for all the world to look at and form its opinion, a good deal of harm may be done.

The proper way to inspire confidence is to start services which have a really good chance of running with absolute regularity and absolute safety. For such a purpose we should choose countries in which weather conditions are more stable and fog and mist more uncommon.

There is no point in starting with the most difficult proposition and being obliged to overcome the greatest difficulties we have to face under the full glare of public attention. As a matter of fact, the public is sure to be more interested in the Continental services than in others.

This makes it all the more necessary that we should not base our case solely upon those services, but should inaugurate others quite as promptly. In this way, when our local services have to be interrupted owing to fog, and the opponents of the movement begin to say "I told you so," we shall be able to counter their influence by pointing to the records of regularity obtained elsewhere.

Probably, some people will regard Mr. Sopwith as a bit of a pessimist—perhaps with ulterior reasons for being so. Personally, I do not put him in this class at all, and I believe that, if we do not make the mistake of omitting his qualifying words "in this country," we shall find out before long that his view of the position is a very just one.

"Medway."

RECONSTRUCTION!

The Grahame-White Co., Ltd., the London Aerodrome, Hendon, N.W.9, are now prepared to devote a portion of their factories, containing the most up-to-date machinery for metal and wood working, and capable of a large output, to any work for which this plant is suitable. Please address communications to the London Office of the Company, 12, Regent Street, Pall Mall, S.W.1.

SIDDELEY-DEASY INTENTIONS.

The extent to which our aircraft and allied concerns have grown during the last four years is far from being realised by those not quite in the running. At a recent Press Luncheon at the Siddeley-Deasy works, Mr. J. D. Siddeley opened the eyes of many who came prepared for some surprises. At the beginning of the war the "Deasy"—as it is always called locally—employed some four hundred hands and at the end of two or three months of war this number had fallen to three hundred. Now the pay roll contains some five to six thousand names, and, incidentally, the wages bill is thirty times greater than it was in 1914—an illuminating fact from more than one point of view! Also, the area of the factory has increased some 1,250 per cent.

Growth Through Aeronautics.

Is this real growth? It is, and it is more. Several works could show a greater increase in area and in the number of hands employed, but it is doubtful if any can show anything like such a growth as a result of the change-over from car to aeroplane and aeroplane-engine manufacture alone. From the earliest days of the war the Siddeley-Deasy concern has specialised on aero-engines, and to this firm belongs in large measure the credit for having taught the Government that aero-engines could be produced successfully on a quantity basis, and, in fact, that they had to be so produced.

From the old discredited R.A.F. to the Siddeley "Puma," aero engines have been turned out in quantities that had attained an average of two hundred per week before the signing of the armistice. Had this event not materialised, the output would have now been nearer to the three hundred mark—a figure to which it was hoped to reach and which was to be maintained. The latest product of the works, the Siddeley "Tiger" engine, was bidding fair to challenge all rivals in the race for power, and nobody speaks of this engine but with regret that it never reached the production stage. Much was expected of this 600 h.p. twelve-cylinder Vee that never had its chance against the Hun.

A New Bombing Aeroplane.

"One of the small firms who have done their bit"—as Mr. Siddeley referred to his company—the Deasy have made quantity production of aero-engines their main function, though they have also been responsible for not a few of the successful R.E.8s and are at present engaged in the construction of the first of their two-engined bombers, a machine that, like the "Tiger" engine, will be denied the chance of showing what it can do in the sphere for which it was primarily intended. When, however, commercial aviation is finding its footing, the Siddeley biplane with its "Tiger" engines should form a very important stepping stone. Its design lends itself to the carriage of passengers instead of bombs with comparatively little modification, and the machine at present under construction has not got so far that the necessary changes cannot be carried out with comparative ease. It is probable that these changes will be actually effected.

A Post-War Programme.

As regards the general post-war programme of the firm, it is disappointing to learn that the present intention is not to proceed with the manufacture of aircraft and aero-engines after existing contracts have been fulfilled. The enormous aeroplane erecting shops are to be devoted to the building of car bodies, but the designing of aeroplanes and their accessories—if an engine can be called an accessory—is to be continued. Their experience gained in the war would indeed be sadly thrown away, as far as aeronautics are concerned, did the Siddeley firm refuse to have anything more to do with aircraft and, even if they do not intend to profit directly by their experience, it is a pleasant thought that others may be able to make use of their welcome services.

What they have learned in making aircraft the Siddeley people intend to turn to good account in the manufacture of cars. The lesson of "quantity plus quality" production has been well learned, and the post-war Siddeley car is to be of one model only—with a six-cylinder engine—and the specialisation policy is even to be pursued so far as to the making of only one type of body. It is hoped, and, one must concede, with very good reason, that this policy will make for the turning out of a car able to compare very well indeed with any on the market both as regards value and quality. All motorists will look forward to its debut with interest. The event may be expected about next midsummer.

AN AERIAL PASSENGER SERVICE.

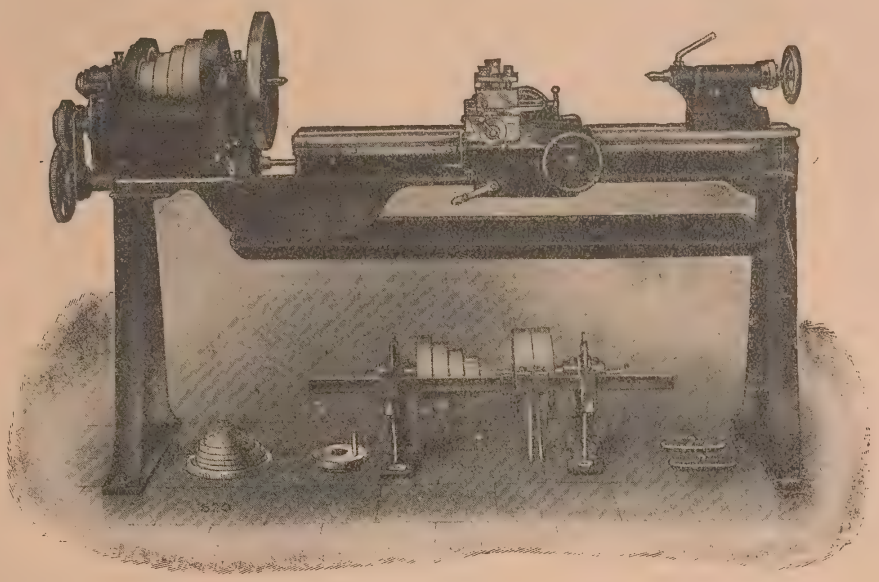
Harrogate is the first town in the country to arrange for an aerial passenger service. Mr. G. Holt Thomas, of the Aircraft Transport and Travel Company, with which firm the arrangement has been made, is confident of the services for passengers being in operation by the coming summer.

The town is fortunate in being able to utilise the famous "Stray," with its 200 acres of ground in the centre of the town, as an ideal landing and ascending place. The duration of the journey from London will probably be under two hours, against a present six hours' railway journey and a pre-war 4¼ hours.

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THE AIRCRAFT TRADER

MARKET TOPICS.

PRICES ARE FOR QUANTITIES ON USUAL TERMS.

DEC. 12TH, 1918.

NON-FERROUS METALS GENERALLY.

Information has been received that arrangements have been made by the Ministry of Munitions to pay brokers and recognised intermediaries a commission of ½ per cent.—subject to cash payment—on all sales of Government stocks to actual consumers.

COPPER.—The Copper market has not settled down to normal conditions, and although a few inquiries are being received for Peace requirements, buyers, on the whole, are reserved, and seem very doubtful about the future fluctuation of prices.

It is not expected that there are very large stocks of Copper held at present, and if there is a general demand for supplies immediately the position is more clearly defined, it is possible that buyers may have difficulty in procuring supplies.

Although the general outlook is rather obscure, there does not appear to be substantial grounds for expecting any appreciable reduction in price.

It is reported that the manufactured Copper trade employees are agitating for an increase in wages. If this is correct, and their demands are granted, it is quite possible that it will have an effect upon the prices of manufactured Copper.

The following materials have been advanced ½d. per lb. The revised prices are:—

Copper Tubes	20¾d. per lb.
Brazed Copper Tubes	20¾d. per lb.
Brass Tubes, S.D.	17½d. per lb.
Brazed Brass Tubes	19¾d. per lb.

TIN.—Business in Tin has been a little more brisk, due, apparently, to prices having been much steadier; but a few buyers are still holding back, effecting a further decline in prices. The Control regulations have not yet been relaxed, and a certain amount of impatience is manifest. On the other hand, some dealers hold quantities of expensive Tin, and the Authorities are, probably, not in a hurry to abolish the restrictions.

LEAD.—The regulations governing Lead have been relaxed, but a certain amount of control is still in existence. It is, however, expected that this will shortly be eliminated. The general feeling is that the present price will not be maintained, and this may account for buyers' reticence. There is a very serious shortage of Lead in U.S.A., and it is understood that Japan has offered to send supplies.

STEEL.—This market is still in a very unsettled condition. The demand for Aircraft Steels has fallen to zero, and the outlook for producers is not very bright. The Control regulations have not been entirely abolished, and orders for Peace demands for commercial Steels have not yet assumed large proportions. A recent announcement, made by the Ministry of Munitions, has stabilised the market, and should result in brisker business.

The circular states that the subsidies which the Ministry has been paying makers, to cover increased costs due to war conditions, will be withdrawn in two stages: those applicable to Steel on Jan. 31st, 1919, when a revised schedule of maximum prices will take effect; those applicable to Pig Iron will continue until April 30th, when it is proposed that all subsidies should entirely cease.

The circular further states that post-war conditions are not sufficiently stable to warrant the fixing of prices after that date (i.e., April 30th).

It was expected that the subsidies would be immediately withdrawn, and, in consequence, large advances in the prices of Steel were expected. No explanation appears to be given for continuing the subsidies on Pig Iron until April 30th. The revised list of Iron and Steel prices, referred to above, and applicable after Feb. 1st, is included in the circular which is dated Nov. 30th, 1918.

Firms interested in the prices of commercial quality Steels and Iron should apply to the Controller of Steel Supplies for a copy. The demand for Sheet Steel has, in common with other Steels, declined considerably, and makers are very quiet indeed.

TIMBER.—The demand.—At present there is very little demand for Aircraft Timbers, and it is not quite clear what the future demand will be, although it is certain that it will be some considerable time before any appreciable calls are made for Aircraft Timbers. The majority of Aircraft Constructors hold fair stocks, and will not be anxious to increase them during the next few months, during which time they will have formed some idea of the probable Peace prospects. All kinds of rumours are afloat, and one hears of certain factories producing cases, toys, furniture, sports equipment, etc., etc.; if this is correct, buyers will soon be busy purchasing Softwoods, and firms are reminded that these woods are still under control, official prices being still maintained.

Prices.—A good deal of speculation is being made as to the possibility of a reduction in prices. Although this would be welcome, there does not appear to be much possibility of any substantial decline for a few months. It is, however, difficult to say what will happen to prices of Hardwoods, until it is known what action the Controller intends to take in order to dispose of the huge stocks held by him. It is expected that Timber will remain under control for at least another six months.

The prices of Aircraft Timbers are unaltered.

FABRIC.—No announcement has yet been made as to the disposal of the stocks held by the Air Ministry, and definite information is anxiously awaited. It is understood that a circular has been issued stating that Aircraft materials generally can be purchased direct from the makers, with Air Ministry approval, after it has first been ascertained that the existing stocks have been exhausted. This apparently implies that constructors are to be compelled to use Air Ministry stocks even if their private technical designers consider a cheaper fabric would be more suitable for commercial machines. Further particulars will be welcomed.

SHELLAC.—The Shellac Control Order has been revoked. By this Order, the purchase, sale, or delivery of Shellac was prohibited, except under licence.

TRIPLEX SAFETY GLASS.

Very few people can have failed to encounter Triplex Safety Glass in at least one of its many various forms. But, possibly, many do not know how this glass was instituted, or its chief points of construction.

Invented by a Frenchman, M. Benedictus, it owes its introduction in England to a motor accident which happened to Mr. R. Delpech. Whilst suffering from the effects of splinters of glass from the wind-screen, which struck his face, Triplex Safety Glass was introduced to Mr. Delpech.

He saw a great future for the invention, and, on his recovery, he, therefore, secured the rights for the process of manufacture and floated a company to place Triplex Safety Glass on the market.

From the time the company was started the glass has been an overwhelming success, on the road, in the air, and at sea. In all these spheres of activity it has been proved to be entirely unsplinterable, irrespective of circumstances.

Triplex Safety Glass consists of two thicknesses of glass with a layer of xylonite between. Glass and xylonite are united by a secret cement and hydraulic pressure. It is simple, but absolutely safe, and, withal, nearly as transparent as ordinary glass.

With the coming of peace, Triplex Safety Glass will find a larger field of usefulness, not only in aviation, but in road, rail and sea transport, and will also be used for commercial and domestic purposes.

THE UBIQUITOUS BOWDEN.

When the mechanical history of the war comes to be written it will be found how large a part has been played in it by the Bowden Wire Mechanism.

Nearly every War Department of Great Britain and the Allies found some use for it, and each year consumed many millions of feet of Bowden Wire, together with the necessary operating parts. It is hoped that before long Bowden Wire will be available for the private purposes of peace.

Books for Christmas Presents

THE AEROPLANE LIBRARY

(1) "FLYING COLOURS."

By Captain R. H. M. Saundby, M.C.

With an Introduction by Major-General E. B. Ashmore, C.B., C.M.G., C.V.O.

An ideal gift book. So far as aviation books are concerned, "FLYING COLOURS" will be unique. It consists of 20 pictures in colours, with brief descriptive text, of the things Captain Saundby has SEEN on the Western front and at home; it illustrates not only the work of the R.F.C. during a whole year over the enemy lines, but the bringing down of a Zeppelin raider in flames, and the protection afforded by the seaplane to Hospital ships, etc. It will be a permanent memorial of the air work of the war; it is not the outcome of an artist's vivid imagination, but a reproduction of actualities. Major-General Ashmore in his introduction says "the series may be relied on as giving a very true and vivid idea of things as seen by a pilot in action." "FLYING COLOURS" will be published in two forms:—

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By Major J. B. McCudden, V.C., D.S.O., &c.

Only a few days before his death Major J. B. McCudden completed the writing of the story of his remarkable experiences in the R.F.C. The manuscript was handed to Mr. C. G. Grey to edit, and as Mr. Grey knew Major McCudden intimately he has been able to impart those touches to the work which the Author would himself have wished. The book is well illustrated with many portraits, pictures of machines, etc. It will be ready immediately.

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(3) "THE £ S. D. OF FLYING."

By Captain A. Swinton.

Captain Swinton shows how the Aeroplane may achieve in peace some of the triumphs which have attended it in war. It is a fascinating theme, and Captain Swinton has worked out for us the air routes of the future, costs of transit and maintenance, and the conditions generally which will make for the success of commercial Aviation. The book is fully illustrated with maps, etc.

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By Stepney Blakeney.

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Mr. Blakeney is a practical mechanic. He knows and explains the best workshop methods and deals in detail with every item down to the last rivet. His book is a practical guide, and its value was at once recognised. A second impression was called for within a few weeks.

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AIRCRAFT FINANCE

CURRENT TOPICS.

Sunbeam Reserve Capitalised.

Expectations of a substantial Sunbeam Motor bonus have now been realised. It is proposed to capitalise £250,000 of the reserve fund by giving to each shareholder one new share in respect of every share held. This news drove the price of the existing £1 share to 90s., which is now quite the highest of the year in comparison with a lowest of 72s. They were selling between 34s. 6d and 66s. in 1914 and between 52s. and 65s. during 1913.

Doubling the Capital.

This bonus out of the accumulated profits of previous years may be open to criticism: at the same time it cannot be denied that shareholders are justly entitled to such a distribution. It means that the capital is doubled from £250,000 to £500,000, and possibly the earning capacity of the undertaking may not prove equal to a maintenance of the 20 per cent. dividend for a year or so. It is argued, however, that dividends of the immediate future will not be seriously affected.

Shares Seem High Priced.

Suppose that the dividend is halved to 10 per cent. on the doubled capital, the new shares would be worth rather less than 40s., representing a yield of 5 per cent., free of tax, or the equivalent of about 7 per cent., subject to tax.

Admittedly, the company has profited exceeding as a result of the war; it has strengthened its financial position very considerably, and the physical state of the property ought to enable the concern to give a good account of itself under post-war conditions. But, all the same, the present price of the shares, even allowing for the bonus, does not seem to be cheap.

An Element of Speculation.

There is, in fact, an element of speculation in the shares. As yet the company is not in a position to present the accounts and report covering the operations of the year ended Aug. 31st. For the preceding year a net profit of £110,100 was earned, compared with £45,000 for 1915-16 and £236,900 for 1914-15. With special levies and excess profits in operation one is loth to jump to conclusions when attempting to analyse present-day balance-sheets. These striking variations may only represent adjustments, but few people like such violent movements.

A Previous Experience.

Back in March, 1914, shareholders received a bonus out of reserve; it was applied differently, 120,000 new £1 shares being offered to them at par and half the cost (i.e. 10s.) was provided out of the reserve fund. For 1915-16 the dividend rose to 30 per cent.

Wartime Tendency.

One is often asked why this tendency towards the capitalisation of reserve funds has been so pronounced during the war period. It is directly due to the abnormal growth of profits arising out of war business, and has been stimulated by the higher range of taxation arising out of war expenditure. But for the latter the movement would not have become so pronounced. Without a doubt the policy has been overdone. In one or two instances it would have been far better to have kept the reserve funds intact against the uncertainties of the future instead of capitalising them and thus burdening the profit-earning capacity of the business.

Possibly the number of companies that have been actuated by greed in adopting the policy is comparatively small; they stand to suffer badly in the course of time.

Adequate Reserve Necessary.

It is obvious that in these times of transitions an adequate and properly-laid-out reserve fund must prove very useful, with advantages that more than compensate for any additional taxation claimed by the State. This will probably be illustrated when the Government dispenses with the excess profit duty and rearranges its plan of taxation.

Stock Exchange Waits.

Because of the disturbing influences of the General Election and Christmas the Stock Exchange is resigned to a period of stagnation until the turn of the New Year. Then, if the prophets are to be believed, things should hum. He would be a simple soul who "banked" on that belief. Apparently the Peace Conference, with all its possibilities, is dismissed as being of no consequence whatever. In all probability "leakages" or imaginary incidents will provoke spasms in markets.

Lively Aircraft Shares.

Rather more activity and greater strength has been observable in aircraft and kindred shares. This originated in the Sunbeam bonus already mentioned. The Rolls-Royce shareholders confirmed the 10 per cent. dividend. Leyland Motors have been steadily absorbed in anticipation of the projected capitalisation of the reserve fund. Rovers, too, developed strength, and Humbers crept up to 20s., at which price they seem to be very fully valued on the recent dividend. The purchaser is paying for prospects.

Bigger Palmer Tyre Profits.

The past year's profit of the Palmer Tyre Co. amounted to £15,318, in comparison with £11,421, but the dividend is to remain at 7½ per cent., free of tax, the increased earnings being provided for strengthening the reserve fund, which receives £7,000 instead of £3,000. A balance of £1,991, against £1,922, is carried forward.

Components Results.

Although the dividend is unaffected, the 10 per cent. payment on the ordinary and deferred shares being repeated, Components, Ltd., made smaller profits last year. Including £79,440 brought in the profit balance of the year to Aug. 31st is given as £119,118, compared with £147,880 for the previous year, including £57,165 brought in.

Stepney Spare Wheel.

A further big increase is shown by the profits of the Stepney Spare Wheel. They amounted to £25,100, against £15,500. The dividend is not advanced, being 10 per cent., but £15,000 instead of £5,000 goes to the reserve fund, which is the sounder policy.

Bigger United Wire Dividend.

In addition to the usual 7½ per cent. dividend, the United Wire Works is to pay a bonus of 2½ per cent. As a result of operations of the year to Sept. 30th the balance at the credit of profit and loss, after providing for depreciation and excess profit duty, is £15,878, compared with £14,035 and £13,702. The sum of £1,500 is placed to general reserve, as was the case twelve months ago, and the balance carried forward is £3,878, against £3,735.

Rolls-Royce Progress.

After the annual meeting on the 11th shareholders of Rolls-Royce were given an opportunity of inspecting the works. These now cover a space of 67,935 yards, or nearly 13 times greater than the original. The greatest expansion has synchronised with the development of the output of aero-engines in realisation of the fact that supremacy in the air was as essential as supremacy on land or sea in the struggle with the Huns.

NEW COMPANIES.

Anglo-Russian and Trans-Siberian Aerial Travel and Transport Syndicate, Ltd.—Private company. Registered Dec. 9th. Capital, £2,200 in 2,000 preference shares of £1 and 4,000 ordinary shares of 1s. each. To establish, equip, maintain, manage, and finance services and routes for the conveyance of mails, passengers and goods by means of aeroplanes, airships, aerobuses, balloons, flying machines and aerial vessels of all kinds to construct and own aerodromes, hangars, landing stages, docks, wharves and conveniences, etc. The subscribers (each with one ordinary share) are:—N. Wagevodsky, 85, Avenue Road, N.W., consulting engineer; G. C. A. Wilkins, Caenwood, Ashtead, Surrey, consulting engineer. Subscribers are to appoint the directors. Registered office:—Sardinia House, Kingsway, W.C.

Aerial Trans-Atlantic Travel and Transport Syndicate, Ltd.—Private company. Registered Dec. 9th. Capital, objects and other particulars similar to Anglo-Russian and Trans-Siberian Travel, etc. (q.v.)

MORTGAGES, CHARGES AND SATISFACTIONS.

Whitehead Aircraft (1917), Ltd.—Mortgage for £6,000, dated Nov. 22nd, 1918, charged on the "Rookeries," Hanworth. Holders:—Law Debenture Corporation, Ltd.

Worms Aircraft Construction Co., Ltd.—Particulars of £4,000 debentures created Nov. 19th, 1918, filed, the whole amount being now issued. Property charged:—The company's undertaking and property, present and future, including uncalled capital. No trustees.

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(Continued from page 2 287.)

W. J. McIntyre, 200555 F. A. Rennison, 146755 R. R. Hill, 137286 R. A. Rutter, 4522 R. J. Steele, Nov. 30th.

A. E. Osborn (Sec. Lt., Northd. R., T.F.) is granted a temp. commn. as Sec. Lt. (S.), Oct. 16th.

Sec. Lt. C. P. King (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt. (S.), Oct. 16th.

Flt. Cadet D. V. Tandy is granted a temp. commn. as Sec. Lt. (S.), Nov. 13th.

Lt. V. M. de Balabre is dismissed the Service by sentence of a General Court-Martial, Nov. 12th.

Lt. H. R. Hawkins is removed from the R.A.F., Nov. 15th.

Maj. R. Loraine relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Maj., Dec. 11th.

Capt. W. F. Hellyar relinquishes his commn. on account of ill-health, and is granted the hon. rank of Capt., Dec. 11th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—R. E. Caverhill-Cameron (contracted on active service), F. A. D. Grace, M.C., B. Ingram, C. E. Morgan (caused by wounds), S. Wilkins, Dec. 11th.

Lt. K. S. Morrison (R.F.A., S.R.) relinquishes his commn on account of ill-health caused by wounds, Dec. 11th.

Lt. A. E. Tyrrell resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Dec. 11th.

Sec. Lt. T. B. Dodwell, D.S.O., relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Sec. Lt., Dec. 11th.

Sec. Lt. (Hon. Lt.) R. N. Pennington (Lt., Quebec R.) relinquishes his commn. on account of ill-health, Dec. 11th.

The following Sec. Lts. resign their commns.:—H. Walker, W. E. G. Wallace, Dec. 11th.

The following officers are antedated in their appts. as Sec. Lts. (A. and S.), with effect from dates stated:—F. J. Madill, April 26th; T. Nolan, May 30th.

S. M. Linkletter is antedated in his appt. as Sec. Lt. (A.), with effect from Aug. 17th.

The surname of Lt. (actg. Capt.) T. B. Tully, A.F.C., is as now described, and not as Bully, as stated on page 11,347 of the "Gazette," Sept. 24th.

The surname of Sec. Lt. A. H. Darnbrough is as now described and not as stated on page 12,902 of the "Gazette," Nov. 1st.

The surname of Sec. Lt. H. H. Storrs is as now described, and not as stated on page 13,003 of the "Gazette," Nov. 5th.

The notification in the "Gazette," dated Nov. 22nd, page 13,741, concerning 339419 Flt. Cadet W. W. Coates is cancelled.

The name of 201141 Flt. Cadet Alfred John Sanford is as now described, and not as stated in the "Gazette," dated Nov. 12th, page 13,315.

The notification in the "Gazette," dated Nov. 22nd, concerning 117693 Flt. Cadet S. L. F. St. Barbe is cancelled.

The date of appt. of Flt. Cadet G. W. Smart is May 4th, and not as stated in the "Gazette," dated Aug. 20th.

The notification on page 8,341 of the "Gazette," July 16th, concerning Sec. Lt. (Hon. Lt.) F. Fletcher (K.F.A., S.R.) is cancelled.

The notification on page 10,191 of the "Gazette" concerning Sec. Lt. G. W. MacLeish is cancelled.

ADMINISTRATIVE BRANCH.—Maj. (actg. Lt.-Col.) R. Cockburn to be actg. Col. (without the pay and allowances of that rank) whilst specially empld., Dec. 10th.

J. P. H. Hayes (temp. Capt., R. Ir. Fus.) is granted a temp. commn. as Capt., and to be actg. Maj. whilst empld. as Maj., Nov. 19th.

Lts. to be actg. Capts. whilst empld. as Capts.:—W. H. Dean, Sept. 12th; H. W. E. Smith, Oct. 1st.

Sec. Lts. to be actg. Capts. whilst empld. as Capts.:—(Hon. Capt.) H. Milman, from (T.), Sept. 1st; H. B. Dakin, Sept. 19th.

To be Lts., from (A.):—Lt. (actg. Capt.) H. E. Faulkner, and to relinquish the actg. rank of Capt., Nov. 2nd; Lt. D. W. D. Kennard, Nov. 22nd.

Lts. (O.) to be Lts.:—J. E. Price, Oct. 25th; C. R. Pilcher, Nov. 25th; H. G. Burgess, Nov. 26th; H. Dandy, Nov. 28th; C. M. Sinclair, Nov. 29th.

The following are granted temp. commns. as Lts., with seny. from April 1st:—R. B. Collins (Lt., Norf. R.), July 19th; R. F. Hamlyn (Lt., Lond. R., T.F.), July 27th (substituted for notification on page 11,867 of the "Gazette," Oct. 8th); E. N. D. Worsley (Lt., Dor. R.), Oct. 25th; P. H. G. Southwell (Lt., Unatt. List), Oct. 28th.

Sec. Lt. (actg. Lt.) F. C. Wild retains the actg. rank of Lt. whilst empld. as Lt., from (S.O.), Nov. 30th.

The following are granted temp. commns. as Sec. Lts. and to be actg. Lts. whilst specially empld.:—A. G. Bazley, W. A. G. Goldsworthy, Nov. 15th.

C. Lyons (Sec. Lt., late Gen. List, R.F.C.) is confirmed in his rank as Sec. Lt., June 29th.

The following are granted temp. commns. as Sec. Lts.:—J. F. Groom, Nov. 11th; R. C. Handley-Ensor, Nov. 12th; G. W. Robinson, Nov. 30th.

Hon. Capt. L. T. M. Pennington relinquishes his commn. on ceasing to be empld., Dec. 11th.

Lt. T. Parker-Jervis (Lt., G. Gds.) relinquishes his commn. on account of ill-health contracted on active service, Dec. 11th.

Sec. Lt. H. R. Oldfield resigns his commn., and is granted the hon. rank of Capt., Dec. 11th.

Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt.:—R. B. Campbell, W. A. Greenwood, T. D. Raby (contracted on active service), J. E. Swinburne, Dec. 11th.

Sec. Lt. R. A. Boxhall resigns his commn., being physically unsuited for the duties of Pilot or Obsr., Dec. 11th.

The initials of Capt. C. V. Booth are as now described and not as stated on page 13,611 of "Gazette," Nov. 19th.

The notification on page 13,743 of "Gazette," Nov. 22nd, concerning Lt. S. P. Jacoby is cancelled.

The notification in "Gazette," Oct. 15th, concerning Sec. Lt. J. G. Newton is cancelled.

TECHNICAL BRANCH.—T. Temple (temp. Capt., New Armies) is granted a temp. commn. as Capt., Nov. 1st, seny. April 1st.

K. H. McLean (temp. Lt., R.N.V.R.) is granted a temp. commn. as Capt., Aug. 21st.

Capt. J. L. Luntley to be Capt. (Gr. B), from (Ad.), April 26th.

Capt. G. H. W. Dawson to be Capt., from (S.O.), Sept. 23rd.

Prof. T. Aglus is granted a temp. commn. as Capt., Nov. 1st.

C. A. Doherty (Lt., Can. Res. Arty.) is granted a temp. commn. as Lt., Sept. 19th, seny. April 1st, and to be actg. Capt. while empld. as Capt.

Lt. J. A. V. Welsh to be actg. Capt. while empld. as Capt., Nov. 2nd.

Sec. Lts. (actg. Lts.) to be actg. Capts. while empld. as Capts. (Gr. B):—W. Burrows, from (Ad.), L. A. Lavender, from (Ad.), G. B. Nicol, Sept. 21st; (Hon. Capt.) R. J. Wallace, Dec. 8th.

Sec. Lts. (actg. Lts.) (Ad.) to be Sec. Lts. and to be actg. Lts. (Substituted for the notification in "Gazette" of Oct. 29th):—A. Crook, C. A. Assister, L. H. Bainton, Aug. 26th; W. J. Root, Aug. 30th; G. D. G. Hake, H. D. Stanniar, R. N. Tweedy, Sept. 2nd; J. F. Alexander, O. C. Lees, Sept. 9th; J. O. Miles, Sept. 16th.

Sec. Lt. (Hon. Lt.) A. J. Cassidy to be Sec. Lt., from (A.), June 13th.

H. J. Lucas (Sec. Lt., York R.) is granted a temp. commn. as Sec. Lt., April 1st.

H. Milman (Capt., R.E.) is granted a temp. commn. as Sec. Lt. (Gr. A), May 27th, seny. April 1st, and to be Hon. Capt.

The following are granted temp. commns. as Sec. Lts.:—Prob. Flt. Officer E. W. Hobbs (late R.N.A.S.), May 10th; E. W. Bell, Oct. 30th.

Sec. Lts. (Ad.) to be Sec. Lts. (Gr. A):—T. H. Storer, July 1st; H. M. Russell, Oct. 7th; N. F. S. Hecht, Nov. 10th; F. L. Tomlinson, H. G. Hawkes, Nov. 16th; C. J. Young, Nov. 25th.

Sec. Lts. (Ad.) to be Sec. Lts. (Gr. B):—H. G. C. Plumridge, Sept. 5th; P. F. Westerman, Oct. 23rd; D. S. G. Burton, Oct. 26th; J. H. Fraser, Nov. 7th; H. T. Savage, J. W. Savage, Nov. 15th; R. W. Letchford, E. W. Husband, Nov. 17th; (Hon. Lt.) L. T. M. Griffin, Nov. 22nd.

Sec. Lt. S. O. Saville is granted the rank of Hon. Lt., July 20th.

Sec. Lt. (Hon. Lt.) G. H. G. Shepherd (Lt., Oxf. and Bucks L.I.) relinquishes his commn. on account of ill-health, Nov. 9th (Substituted for notification in the "Gazette," Nov. 8th.).

Capt. G. D. Etches relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Dec. 11th.

Lt. E. W. Bennett, M.C., relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Dec. 11th.

Sec. Lt. (Hon. Lt.) C. M. Hennell relinquishes his commn. on account of ill-health, Dec. 11th.

The surname of Sec. Lt. (actg. Lt.) D. G. Bourn is now as described, and not as stated on page 10911 of the "Gazette," Aug. 27th.

The surname of Sec. Lt. (actg. Lt.) R. T. Sault is as now described, and not Saunt as stated on page 13,923 of the "Gazette," Nov. 26th.

The surmane of Sec. Lt. (actg. Lt.) F. J. MacLennan is as now described, and not Machennan, as stated on page 13,745 of the "Gazette," Nov. 22nd.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts.:—R. C. Fuller, Nov. 12th; C. Dickson, M.C. (late temp. Capt., R.A.M.C.), J. P. Doyle, Nov. 14th.

The following are granted temp. commns. as Lts.:—D. C. Farquharson, P. J. Herlihy, Nov. 14th.

The notification on page 13,924 of "Gazette," Nov. 26th, concerning Capt. H. J. Bates is cancelled.

DENTAL BRANCH.—H. N. Hillier is granted a temp. commn. as Lt., Nov. 12th.

CHAPLAINS BRANCH.—The following are granted temp. commns. as Chaplains, with the relative rank of Capts.:—

Rev. E. H. Wright (late temp. Chap. to the Forces, 4th Cl., A.C.D.), Dec. 6th.

Rev. W. H. B. Gipps, Rev. J. T. S. Law, Dec. 8th.

MEMORANDA.—Lt.-Col. J. H. A. Landon, D.S.O., is granted a permanent commn. as Lt.-Col., Dec. 10th.

H. S. Rogers (temp. Lt., Spec. List) is granted a temp. commn. as Lt., Oct. 8th, seny. April 1st.

AIR MINISTRY, Dec. 13th.

R.A.F.—The following temp. appts. are made:—Staff Officers, 3rd Cl.—And to be actg. Capts. whilst so empld., if not already holding that rank:—Lt. (Hon. Capt., actg. Capt. C. Ferris, Oct. 3rd (Air) Lt. (Hon. Capt.) G. M. Smyth, Sept. 7th. (P.) Capt. H. M. Earnshaw, Nov. 4th; Sec. Lt. (Hon. Lt.) C. Trenchard, Nov. 7th.

FLYING BRANCH.—Majs. to be actg. Lt.-Cols. whilst empld as Lt.-Cols. (A.):—A. M. Wilkinson, D.S.O., April 15th; W. S. Douglas, M.C., Nov. 9th;

Capts. to be actg. Majs. whilst empld. as Majs. (A.):—J. O. Leach, M.C., July 1st; J. W. Woodhouse, D.S.O., M.C., Dec. 6th.

Capt. H. M. Morris, D.S.C., to be graded for pay as Capt. whilst empld. as Capt. (A. and S.), Nov. 1st.

Lt. J. H. W. Clarke to be actg. Capt. whilst empld. as Capt. (A.), Nov. 12th.

Lt. M. H. Rattray to be actg. Capt. whilst empld. as Capt. (A. and S.), Nov. 22nd.

Lts. to be Lts. (A.), from (Obsr. Officers):—A. Shallcross, Sept. 7th; H. Harris, Sept. 17th; J. MacKay, Sept. 22nd; R. J. Morton, W. Hughes, W. F. Woods, Sept. 30th; H. Soulsby, Nov. 9th; T. S. Blair, F. H. Shades, R. B. L. Taylor, Nov. 11th; H. V. R. Hill, S. L. McClenaghan, Nov. 13th; L. L. T. Sloot, Nov. 14th.

Capt. D. S. Don to be Sec. Lt. (A.), and to be Hon. Capt., from (A'shp.) Nov. 10th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.):—F. B. Cox, C. Thomas, July 14th; S. de V. Clarke, Aug. 30th; A. B. Corey, Sept 6th; L. H. Forbes, Sept 9th; A. W. Day, Sept. 21st; C. H. Kincaid, Sept. 25th; R. M. King, Sept. 28th; J. Cooke, R. W. F. Dunning, Nov. 8th; G. M. Craig, R. F. J. Doole, F. C. Littleboy, Nov. 9th; J. Franklin, A. E. R. Trotman, H. Cox, S. Saxon, J. McLennan, Nov. 10th; C. E. Nicholas, S. A. Camp, I. A. Wright, Nov. 11th; M. B. Massey-Hicks, W. T. Randles, Nov. 13th; G. H. Bodington, Nov. 14th; C. G. Shapland, J. Cumming, Nov. 15th; A. B. Richardson, E. L. Roberts, A. Phipps, Nov. 16th; J. E. B. Skinner, Nov. 17th.

The following Prob. Flt. Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lts. (A.):—G. V. McNaughton, Nov. 8th; A. M. Broad, Nov. 11th; J. M. Simpson, Nov. 13th; W. A. Shaw, R. R. Loveday, R. J. Weaver, Nov. 14th; C. R. Gains, Nov. 15th; G. R. Hasselhuhn, Nov. 17th; W. G. Minnes, Nov. 18th.

The following are granted temp. commns. as Sec. Lts. (A.):—L. Hudson (Sec. Lt., I.A.R.O.), Aug. 4th; V. O. Reynolds (Sec. Lt., Hamp. R.), Aug. 28th, R. P. Sorge (temp. Lt., R. Ir. Fus.), and to be Hon. Lt., Aug 29th; T. Atkinson, M.M. (Sec. Lt., R.F.A., Spec. Res.), Sept. 4th; J. M. Craig, V.C. (Lt., R. Sco. Fus., T.F.) and to be Hon. Lt., Sept. 5th; R. L. Washington (Sec. Lt., R. War. R., Spec. Res.), Sept. 7th; H. J. Russell (temp. Lt., A.S.C.), and to be Hon. Lt., Sept. 12th; E. A. Winter (Sec. Lt., R.F.A., T.F.), Sept. 13th; G. J. Brown (Lt., K.O. Sco. Bord. R., T.F.), and to be Hon. Lt., Sept. 14th; R. O. Goddard (Sec. Lt., S. Wales Bord. R., Spec. Res.), Sept 17th; E. B. P. Davis (temp. Capt., Essex R.), and to be Hon. Capt., Sept. 20th; E. H. Cook (Lt., Glouc. Huss., T.F.), and to be Hon. Lt.; T. Large (temp. Lt., K. Lpool. R.), and to be Hon. Lt., Sept. 22nd; T. M. Hodgson (Sec. Lt., A.S.C.), Sept. 23rd; A. Shepherd (temp. Sec. Lt., Lan. Fus.); J. H. W. Goodall (temp. Sec. Lt., North'n R., attd. Middx. R.); A. H. J. Howlett (Lt., Pioneers, I.A.), and to be Hon. Lt., Sept. 24th; E. G. Tyler (temp. Lt., K. Lpool. R.), and to be Hon. Lt.; S. Wright (Lt., North'n. R., T.F.), to be Hon. Lt.; S. Smith (Lt., Essex R., T.F.), and to be Hon. Lt., Sept. 26th; J. S. Batty (Lt., R.F.A., T.F.), and to be Hon. Lt., Sept. 27th; V. C. Davis (Sec. Lt., Lond. R., T.F.); L. W. R. Grubb (Lt., R. Ir. Rif., Spec. Res.), and to be Hon. Lt.; E. McL. Watson (Lt., Middx. R., T.F., attd. Hamps. R.) and to be Hon. Lt., Sept. 30th; C. O'B. Dickinson, M.C. (Lt., R.G.A., Spec. Res.), and to be Hon. Lt.; Oct. 4th; R. P. Pinch (Sec. Lt., Rif. Brig., T. F.), Oct. 8th; J. L. Fletcher (Sec. Lt., Dorset R., T.F.), Oct. 10th; F. V. Le Pavoux (Lt., K.R.R.C.), and to be Hon. Lt.; R. M. Close (temp. Sec. Lt., Notts. and Derby R.), E. Phillips

(Sec. Lt., Northd. R., T.F.), G. W. Walrond (Lt., C. Ont. R., C.E.F.), and to be Hon. Lt., Nov. 9th; A. Lewin (temp. Sec. Lt., R. W. Kent R.), O. M. Martin (Lt., Manitoba R., C.E.F.), and to be Hon. Lt., M. W. Gallop (Sec. Lt., R.F.A., Spec. Res.), Nov. 10th; A. Dunton (Lt., Lond R., T.F.), and to be Hon. Lt., H. H. Fox (Sec. Lt., Lond. R., T.F.), Nov. 12th; L. Kershaw (Lt., W. Rid. R., T.F.), and to be Hon. Lt., J. G. Munro (temp. Sec. Lt., Middx. R.); L. B. S. Symonds (temp. Sec. Lt., Suff. R.), Nov. 12th; F. L. Wheeldon, D.S.O. (temp. Lt., E. Lan. R.), and to be Hon. Lt., Nov. 14th; T. C. Knowles, M.M. (Lt. B. Col. R., C.E.F.), and to be Hon. Lt., Nov. 15th; R. Massey (Sec. Lt., Manch. R., T.F.); J. J. Palmer (Sec. Lt., Lond. R., T.F.), C. H. Shallcross (Sec. Lt., E. Lan. R., T.F.), Nov. 16th; A. C. McKinnon (Lt., N. Bruns. R., C.E.F.), and to be Hon. Lt., Nov. 18th; C. H. James (late Lt., R.A.F.), and to be Hon. Lt., Dec. 9th.

The following Cadets are granted temp. commns. as Sec. Lts. (A.):—D. C. Fuller, Oct. 31st; J. J. Batchelor, D. W. Bell, R. E. Bennett, R. K. Blair, C. M. Bochmer, H. P. Boucher, H. E. Collins, T. G. Davidson, P. R. Dunn, L. E. Edwards, W. B. Fry, J. T. Galligan, C. H. Godfrey, R. T. Hallchurch, N. J. Hartley, R. T. Jackman, E. Le R. King, L. V. Lane, A. G. Lewis, N. P. Lockwood, M. B. Macauley, C. H. Meyer, D. F. MacArthur, O. S. McCutcheon, A. W. McElroy, C. A. McGillivray, A. H. McKeown, H. J. O'Brien, L. F. Patterson, N. H. Petrimoulx, J. W. Phillips, K. B. Read, J. P. Russell, D. Sapte, A. W. C. Trew, O. J. Walsh, E. E. Watts, P. J. Windle, F. W. Young, V. J. Zaczkowski, C. Moyer, Nov. 7th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—L. G. Hummerstone (Sec. Lt., Lond. R.) (since decd.), May 25th; H. W. Deacon (Capt., R.F.A.), and to be Hon. Capt., Oct. 5th; A. C. Ranshaw (temp. Sec. Lt., Linc. R.) is granted a temp. commn. as Sec. Lt. (S.), Oct. 27th.

Lt. (actg. Capt.) J. G. Coombe relinquishes his commn. on ceasing to be empld., and is granted the hon. rank of Capt., Dec. 14th.

The following Lts. relinquish their commns. on ceasing to be empld.:—A. E. Robotham (Lt., R.G.A., S.R.), June 22nd. F. F. Bonniwell, Aug. 10th; V. B. Persse (Lt., Can. A.S.C.), Oct. 4th; J. L. Mazucco Oct. 29th; L. F. Cameron (Lt., Manitoba R.), Nov. 3rd; L. A. Smith (Lt., Sask. R.), Nov. 18th; A. N. G. Summers (Lt., Lancers), Nov. 23rd; T. J. Molony (Lt., R. W. Kent R.), Nov. 26th; A. F. Wood (Lt., R.F.A.), Dec. 3rd.

The following Lts. relinquish their commns. on ceasing to be empld. and are granted the hon. rank of Lt.:—E. A. Clegg, W. A. MacMichael, G. F. C. Matthews, D. Nelson, J. L. Walton, Dec. 11th.

The following Lts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lt.:—C. W. Langlands, C. H. Newbold, Dec. 14th.

The following Lts. relinquish their commns. on account of ill-health:—H. Blackburn (Dur. L.I.), (Hon. Capt.) G. C. H. Culley (Capt., Norf. R.), Dec. 14th; Lt. H. W. Watts relinquishes his commn., being physically unsuited for the duties of Pilot or Obsr., Dec. 14th.

The following Sec. Lts. relinquish their commns. on ceasing to be empld.:—D. F. McColl, Oct. 11th; (Hon. Capt.) J. D. Thomson (Capt., Can. A.P.C.), Dec. 2nd.

The following Sec. Lts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lt.:—A. D. Clarke, R. G. Frodham, P. V. Frederichsen, A. L. MacLean, P. R. J. Roberts, J. A. Weller (caused by wounds), Dec. 14th.

The following Sec. Lts. relinquish their commns. on ceasing to be empld., and are granted the hon. rank of Sec. Lt.:—R. D. Brownlie, R. F. Hacon, E. H. Seale, Dec. 14th.

Sec. Lt. C. Dean relinquishes his commn. being physically unsuited for the duties of Pilot or Obsr., Dec. 14th.

The following are antedated in their appts. as Sec. Lts. (A.) as now stated:—R. M. Balfour, June 19th; M. S. Dickinson, July 1st.

The following are antedated in their appts as Sec. Lts. (A. and S.) as now stated:—L. G. Cunningham, April 13th; R. A. Caldwell, May 29th.

The date of appt. of Lt. (actg. Capt.) E. D. Fanshawe is Aug. 23rd, and not as stated in "Gazette" Sept. 13th.

The notification in "Gazette" May 24th concerning Sec. Lt. F. W. Scriver is cancelled.

The notification in "Gazette" July 5th concerning Sec. Lt. M. Fearman is cancelled.

The notification in "Gazette" Nov. 29th concerning Flt. Cadet G. A. March is cancelled.

ADMINISTRATIVE BRANCH.—Capt. (actg. Maj.) C. A. Shaw, D.S.O., to be actg. Lt.-Col. while empld. as Lt.-Col., from (S.O.), Nov. 7th.

To be actg. Majs. while empld. as Majs.:—Lt. E. P. Manson, M.C., June 3rd; Lt. (actg. Capt.) A. C. Rowden, Oct. 7th; Capt. M. C. P. Hamer, Oct. 31st.

R. A. Buckmaster (Capt., Oxf. and Bucks L.I., T.F.) is granted a temp. commn. as Capt., June 6th. sen. April 1st, and to be actg. Maj. while empld. as Maj.).

The following are granted temp. commns. as Lts., sen. April 1st, and to be actg. Majs. while empld. as Majs.:—C. W. Dyer (temp. Lt., Middx. R.), June 11th; C. E. Hodgson (temp. Lt., attd. R. War. R.), July 9th; F. H. Hooper (Lt., R.F.A., T.F.), Nov. 7th.

H. W. Bowker (temp. Capt., attd. Suff. R.) is granted a temp. commn. as Capt., June 27th, sen. April 1st.

Lts. to be actg. Capts. while empld. as Capts.:—H. V. Rabagliati, May 3rd; H. G. Jones, Aug. 8th; (Hon. Capt.) P. Colbeck, from (T.), Aug. 15th; E. A. Philippi, Nov. 1st; (Hon. Capt.) A. M. Watson, from (T.), Nov. 21st.

Lts. (A.) to be Lts.:—(Hon. Maj.) J. Cemlyn-Jones, Oct. 2nd; A. H. Cocking, Nov 23rd; H. S. Nichols, Nov. 25th; B. Strange, Dec. 2nd.

Lts. (O.) to be Lts.:—A. G. R. McKenzie, April 1st; F. Crossley, Nov. 2nd; H. W. Hamer, Nov. 19th.

Lt. A. G. Baker to be Lt., from (S.O.), Nov. 18th.

The following are granted temp. commns. as Lts., sen. April 1st:—F. H. Ward (Lt., W. York. R., T.F.), July 25th; H. G. Lyne (Lt., T.F. Res.), Aug. 27th; J. R. S. Borman (temp. Lt., attd. Bord. R.) Sept. 2nd; G. Prater (Q.M.R. and Capt., Special List), and to be Hon. Capt., Oct. 14th; I. F. L. Elliot (Lt., Suff. R., T.F.), Oct. 21st; J. H. Hannay (Capt., A.S.C.), and to be Hon. Capt., Oct. 29th; R. H. New (Lt., Worc. R., Spec. Res.), Nov. 11th.

Sec. Lt. (Hon. Lt.) A. Colling to be actg. Lt. while empld. as Lt. from (T.), Oct. 25th.

The following are granted temp. commns. as Sec. Lts., sen. April 1st:—S. A. Gordon (temp. Sec. Lt., E. Kent R.), June 10th; H. Friend Sec. Lt., R. War. R., T.F.), Aug. 22nd; G. T. Armitage (temp. Sec. Lt., Lab. Corps), Sept. 11th; I. Coombes (Sec. Lt., Northn. R., T.F.) is granted a temp. commn. as Sec. Lt., Oct. 24th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts.:—A. R. Knowles, July 31st; F. L. Howard, Nov. 24th.

Capt. S. H. Pratt (Lt., R. Fus., S.R.) relinquishes his commn. on account of ill-health, Dec. 14th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted hon. rank of Sec. Lt.:—N. B. Edwards, H. Lancashire, H. F. Phillips (contracted on active service), Dec. 14th.

The following Sec. Lts. resign their commns.:—J. A. Esslemont, (Hon. Lt.) A. H. Searle, Dec. 14th.

The surname of Lt. W. A. J. Gribble is as now described, and not Cribble as stated in "Gazette" Dec. 3rd.

The initials of Lt. C. C. J. Croydon are as now described, and not as stated in "Gazette" July 12th.

TECHNICAL BRANCH.—Capts. to be actg. Majs. while empld. as Majs.:—J. C. Derham, H. A. Hall, W. O. Pearce, E. S. Sturdee, Oct. 31st.

Capts. to be actg. Majs. while empld. as Majs. (Gr. B):—L. G. Barber, S. Clark, Sept. 12th; J. T. Matthews, from (Ad.), Oct. 31st.

S. Lees (Eng. Lt., R.N.) is granted a temp. commn. as Capt., Oct. 25th, seny. April 1st.

Lts. (Hon. Capts.) to be actg. Capts. while empld. as Capts. (Gr. A):—J. C. Wallace, Nov. 1st; L. J. Jones, Nov. 22nd.

Lt. W. F. Dry to be Lt. (Gr. A), from (A.), Sept. 4th.

Sec. Lts. to be actg. Lts. (Gr. A) while empld. as Lts.:—C. W. Grey, from (Ad.), Nov. 13th; (Hon. Lt.) C. V. Thornton, Nov. 17th; R. L. Hartley, Nov. 28th.

Lt. A. Heatherley to be Lt., from (Ad.), Oct. 14th.

F. W. Nicholson (Lt., R.E., T.F.) is granted a temp. commn. as Lt., Nov. 7th, seny. April 1st.

J. C. E. Price (Sec. Lt., Lond. R., T.F.) is granted a temp. commn. as Sec. Lt. (Gr. A), July 27th, seny. April 1st, and to be actg. Lt. while empld. as Lt.

Sec. Lt. W. H. Hodson to be actg. Lt. (Gr. B) while empld. as Lt., Nov. 5th.

Sec. Lts. (Ad.) to be Sec. Lts. (Gr. A):—E. A. O'Brien, July 1st; H. M. Russell, Oct. 7th; L. M. Lawlor, Oct. 8th, C. G. Butler, C. C. Newman, Nov. 1st; J. Pritchard, R. L. Wills, R. I. Croucher, E. Ware, H. Lloyd, A. Dalziel, Nov. 2nd; H. R. Mayes, Nov. 8th; H. S. Barton, Nov. 12th; J. Bremner, G. J. Laverty, Nov. 13th; B. Moore, J. Aitchison, G. W. U. Chissold, Nov. 17th; W. H. Heard, P. C. Heming, H. G. Bill, R. A. Wright, Nov. 21st.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Gr. A):—F. A. Wood, June 26th; E. Hattemore, Sept. 16th.

The following are granted temp. commns. as Sec. Lts. (Gr. A), and with sen. from April 1st:—J. Dudley (Sec. Lt., R.E., T.F.), Aug. 15th; J. A. Bonnyman (Lt., Welsh R., T.F.), and to be Hon. Lt., Aug. 27th; A. H. Varian (temp. Sec. Lt., Gen. List), Nov. 21st.

The following are granted temp. commns. as Sec. Lts. (Gr. A.):—S. Pope (temp. Sec. Lt., R.E.), H. D. McL. Hayward (temp. Sec. Lt., R.E.), Nov. 2nd.

S. Empsall (temp. Sec. Lt., R.E.) is granted a temp. commn. as Sec. Lt., Oct. 30th, seny. April 1st.

Sec. Lts. (Ad.) to be Sec. Lts. (Gr. B):—A. F. Potter, Aug. 8th; A. C. Smart, Sept. 13th; W. Ponting, Oct. 5th; C. Duffy, A. H. Warriner, Oct. 8th; H. E. Stiles, Oct. 10th; S. T. Fowler, W. J. Lawrence, E. H. Hughes, A. M. Watters, H. D. Olson, Oct. 15th; T. B. Nelson, Oct. 22nd; H. V. Lawley, Nov. 4th; W. C. Hanney, Nov. 6th; P. O. Patterson, W. H. Shayler, Nov. 13th; C. C. Lindsay, A. H. V. Kingdon, E. B. Hodgkinson, M. Laidlaw, S. E. Knight, F. F. P. Hammond, Nov. 17th; P. C. Beardwood, E. J. H. Bluett, C. W. Daniel, H. Owen, T. H. Rudd, G. Burrows, V. G. Jeffreys, J. A. Peoples, T. L. Grey (and to be Hon. Lt.), Nov. 21st.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (Gr. B):—G. J. Mayer, April 1st; F. S. Willsie, Nov. 21st.

To be Sec. Lts. (Gr. B) and to be Hon. Lts. from (A):—Lt. G. S. George to be Sec. Lt., and to be Hon. Lt., from (A.), July 28th; H. A. Cole, Nov. 6th; G. A. Gillings, Nov. 17th; J. D. Robinson, Nov. 21st.

Lt. G. M. Roberts to be Sec. Lt. (Gr. B), and to be Hon. Lt. from (A. and S.), Nov. 21st.

Lts. (Ad.) to be Sec. Lts. (Gr. B):—L. T. G. Jefferson, and to be Hon. Lt., Nov. 13th; (Hon. Capt.) C. C. Clark, and to be Hon. Capt., Nov. 21st; F. H. Jones (actg. Lt.) (Ad.) to be Sec. Lt. (Grade B), Nov. 11th.

To be Sec. Lts. (Gr. B), from Sec. Lts. (Obsr. Officers):—N. W. Walmsley, M.C., and to be Hon. Lt., July 20th; J. L. Tait, Nov. 16th; D. J. Palmore-Bedford, Nov. 29th.

J. F. Farquharson (temp. Sec. Lt., Lab. Corps) is granted a temp. commn. as Sec. Lt., Nov. 4th.

Sec. Lts. relinquish their commns. on ceasing to be empld.:—(Hon. Lt.) F. A. I. Richardson (Lt., Linc. R.), June 26th; (Hon. Capt.) W. R. Browne (Capt., Wilts. R.), Nov. 25th.

Maj. J. R. Potter relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., Dec. 14th.

The following Capts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Capt.:—A. J. Dronsfield, G. Wilder, Dec. 14th.

Sec. Lt. J. C. McInnes relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lt., Dec. 14th.

The following Sec. Lts. (Hon. Lts.) relinquish their commns. on account of ill-health:—W. R. C. Hodge (Lt., Kent Cyclists Batt.) (caused by wounds), F. L. Robinson (Lt., R.H.A.) (contracted on active service), T. C. L. Wood (Lt., Northd. Yeo., T.F.), Dec. 14th.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts.:—T. E. Mulvany (late temp. Capt., R.A.M.C.), Sept. 28th; R. J. Aherne (late temp. Capt., R.A.M.C.), Dec. 5th.

The initials of the following are as now described, and not as stated in "Gazette" Nov. 26th:—H. C. Bazett, M.C., J. A. Watson, J. D. Bangay, H. M. Holt, J. B. Stevenson.

E. O. B. Carbery (Fleet Surg., R.N.) is as now described, and not as stated in "Gazette" Nov. 26th.

The Corps of A. Leitch, Capt., is R.A.M.C., and not R.A.M.C., T.F., as stated in "Gazette" Nov. 26th.

DENTAL BRANCH:—The following are granted temp. commns. as Capts., Oct. 1st, with seny. from April 1st:—H. F. Barge (temp. Capt., Gen. List, Dental Surg.); C. L. Colbran (temp. Capt., Gen. List, Dental Surg.); C. J. Crocker (temp. Capt., Gen. List, Dental Surg.); J. Speak (temp. Capt., Gen. List, Dental Surg.); T. F. Healey (temp. Capt., Gen. List.).

D. H. W. Williamson (temp. Lt., Gen. List, Dental Surg.), is granted a temp. commn. as Lt. (Oct. 1st, with seny. from April 1st.)

CHAPLAINS BRANCH.—Rev. S. L. Clarke (Chap. 1n Cr., R.N.) is granted a permanent commn. as Chaplain, with the relative rank of Lt.-Col., Nov 22nd.

Rev. S. L. Clarke to be Deputy Chaplain-in-Chief with the acting relative rank of Colonel, Dec. 12th.

W. J. Selby (Chap. to the Forces, 1st Cl., T.F., attd. Glos. Regt.) is granted a temp. commn. as Chaplain, with the relative rank of Col., Dec 16th.

The following are granted permanent commns. as Chaplains, with the relative rank of Capts.:—Rev. M. H. Edwards (Chap., R.N.), Rev. W. T. Rees (Chap., R.N.), Nov. 22nd.

The following are granted temp. commns. as Chaplains, with the relative rank of Capts.:—Rev. C. H. Collier (temp. Chap., R.N.), Rev. H. A. Thomas (temp. Chap., R.N.), Rev. D. H. A. Williams (temp. Chap., R.N.), Nov. 22nd; Rev. P. R. Butler (temp. Chap. to the Forces, 4th Cl., A.C.D.), Rev. W. Galpin, Dec. 10th.





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As soon as parts are made in the "Ascol" Factory they are transferred to the Stock rooms of "Ascol" House and there examined by A.I.D. Carefully compiled stock sheets show at a glance the number of every part available, and every fortnight a complete indexed Stock Sheet is prepared, which forms the nucleus of "Ascol News." On this page is an abbreviated list of parts now available. All orders are despatched same day as received.

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INDEX TO STOCK LIST

Look carefully through this Index Page and you will be able to see at a glance exactly where to find the part you are requiring.

Description.	Aircraft No.	See Stock List page.
B—BOLTS (Hex. A.G.S.) Various	—	13 & 14
BOLTS & NUTS (Metric)	—	15
BRUSHES (Dope) "Ascol"	—	23
" (Various)	—	23
C—CABLE	—	17
CANS (Dope)	—	23
CLIPS (Hose)	208	21
E—EYEBOLTS	122/3	16
EYEBOLTS & NUTS (Metric)	—	17
EYEBOLTS (Special)	—	17
" ("Avro")	—	17
" (D.H. 6)	—	17
EYELETS & WASHERS	232	21
F—FERRULES (Wire)	156	10
FILE CLEANERS (Steel Wire "Ascol")	—	23
J—JOINTS (Universal)	335	22
" (Fork	168 & 175	21
" "	1163/70	21
L—LOCKING Wires	154	10
M—MICROMETERS ("Ascol")		23
N—NUTS (A.G.S.) Various		15 & 16
" (Whitworth)	—	16
" (Brass)	—	16
" (Wing)	—	16

MEMORANDA.—Capt. (actg. Lt.-Col.) E. P. A. Melville to be Hon. Maj.
Sec. Lt. (Hon. Lt.) C. H. Blakeway to be actg. Capt. whilst holding a special appt. at the Ministry of Munitions, Nov. 1st.
Sec. Lt. R. F. Ellis relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lt., May 22nd (substituted for notification in "Gazette," May 21st.
Maj. H. G., Viscount Tiverton, relinquishes his commn on account of ill-health, and is granted the hon. rank of Maj., Dec. 14th
Sec, Lt. L. H. Corbould-Ellis relinquishes his commn. on ceasing to be empld., Sept. 28th.
Sec. Lt. D. McK. Sheridan to take rank and prec. as if his appt. as Sec. Lt. bore date Oct. 26th.

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, Dec. 12th.

The following were severally introduced into the presence of the King, when His Majesty invested them with the Insignia of the respective Divisions of the Most Excellent Order of the British Empire to which they have been admitted:—
Commander.—Mr. Frederick Handley Page.
Officers.—Mr. Samuel Saunders and Lt.-Col. Cyril Shove.
Members.—Capt. William Prentice, R.A.F.; Maj. Charles Prince, R.A.F.; Maj. John Savage, R.A.F.; Capt. George Smith, R.A.F.; Maj. Fred Songhurst, R.A.F.; Maj. George Stagg, R.A.F.; and Maj. Stanley Turner, R.A.F.

BUCKINGHAM PALACE, Dec. 13th.

The following Officer was introduced into the presence of The King, when His Majesty invested him with the Distinguished Service Order and the Military Cross.—Capt. Cedric Howell, R.A.F.
The King then conferred decorations as follows:—
THE DISTINGUISHED SERVICE CROSS.—Lt.-Col. William Sitwell, R.A.F.; Capt. Evelyn Fitzherbert, R.A.F.
THE MILITARY CROSS.—Capt. Paul Beanlands, Hamp. R., attd. R.A.F.; Lt. Christopher Alderson, R.E., attd. R.A.F.; Lt. Herbert Greenwood, R.A.F.; Lt. Arthur Keep. R.A.F.; Sec. Lt William Lane, R.A.F.

THE CASUALTY LIST.

MILITARY.

Reported Dec. 11th.

CANADIAN FORCES.—DIED.—Campbell, Lt. K. P., Sask. R., attd. R.A.F.
Orleans and Braganza, Capt. A. G. P., Prince of, M.C., Can. Cav.
The following officers, who were prisoners of war in Germany, have been released, and have arrived in England:—
AUSTRALIAN FORCES.—Love, Lt. H. K., F.C.
CANADIAN FORCES.—Gross, Lt. C. R., Man. Regt., attd. R.A.F.; Helwig, Lt. N. W., Cent. Ont. Regt., attd. R.A.F.; James, Lt. L. R., B.C. Regt., attd. R.A.F.; Kewley, Lt. B. H., Man. Regt., attd. R.A.F.; Macdonald, Lt. R. M., Man. Regt., attd. R.A.F.; White, Lt. R. W., Can. M.G.C., attd. R.A.F.

Reported Dec. 12th.

The following officer, who was a prisoner of war in Germany, has been released, and has arrived in England:—
Hudson, Capt. A. R., Yeomanry, attd R.F.C.

Reported Dec. 13th.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England:—
Browne, Lt. H. W., R.F.C.; Clemons, Lt. H. S., R.A.S.C., attd. R.F.C.; Gilbert, Lt. C. G., R.F.C.; Hollis, Lt. A., Hamps. R., attd. R.F.C.; Lindsay, Sec. Lt. A. T. W., R.F.C.; Pickford, Sec. Lt. E. W., R.F.C.; Pope, Lt. A. D., R.F.C.; Pruden, Sec. Lt. W. C., R.F.C.; Westing, Sec. Lt. F., R.F.C.
NEW ZEALAND FORCES.—Harrison, Lt. W., N. Zea. Mtd. Rif., attd. R.A.F.

Reported Dec. 14th.

The following officers, who were prisoners of war in Germany, have been released:—
Henry, Sec. Lt. S. S., R.F.C.
Macdonald, Sec. Lt. R., R.F.C.
Richardson, Lt. D. D., R.F.C.
The following officer, who was a prisoner of war in Turkey, has been released:—
Lander, Capt. T. E., M.C., High. L.I., attd. R.F.C.

Reported Dec. 16th.

The following officer, who was a prisoner in Germany, has been released:—Taylor, Sec. Lt. J. C., K.O.S.B., attd. R.F.C.

Reported Dec. 17th.

The following officers, who were prisoners of war in Germany, have been released:—
Green, Lt. E. G., M.C., R.E., attd. R.F.C.; Green, Lt. W. H., King's (Lpool R.), attd. R.F.C.; Robertson, Lt. G. M., High. L.I., attd R.F.C.
The following officers, who were prisoners of war in Germany, have been released, and have arrived in England:—
Tullock, Lt. K. E., R.F.C.; Walker, Capt. E. G. S., R.F.C.; Wood, Lt. A. W., W. Yorks R., attd. R.F.C.; Gayford, Lt. D. B., Queen's (R. W. Surr. R.), attd. R.F.C.
AUSTRALIAN FORCE.—Cornish, Capt. E. W., M.C., F.C.
CANADIAN FORCES.—Hustwitt, Lt. S. A., Can. Eng., attd. R.A.F.; McCann, Lt. C. M., Can. M.G.C., attd. R.A.F.; Mercer, Lt. G. A., Can. Cyc. Corps, attd. R.A.F.
The following officers, who were prisoners of war in Turkey, have been released:—
AUSTRALIAN FORCE.—Treloar, Lt. W. H., F.C.; White, Capt. T. W., F.C.
CANADIAN FORCES.—Baillon, Lt. E. N., B.C. Regt., attd. R.A.F.; Haight, Capt. W. L., W. Ont. Regt., attd. R.A.F.
The following officer, who was a prisoner of war in Austria, has been released:—
Jerrard, Lt. A., V.C., S. Staff. R., attd. R.F.C.

CASUALTIES AMONG W.Os., N.C.Os. AND MEN. THE DATES ARE THOSE OF THE OFFICIAL LIST.

The following soldiers, who were prisoners of war in Germany, have been released, and have arrived in England:—
DEC. 2nd.—R.F.C.—Attwater 2202 Serjt. S. (Preston); Chilton 876 2nd Cl. Air Mech. J. (Watford); Topliffe 1746 Serjt. G. (Albany Street, W.).

AUSTRALIAN IMPERIAL FORCE

DIED.

DEC. 5th.—F.C.—Kitto 1404 F.

AIR FORCE.

Reported Dec. 11th.

KILLED.—Davison, Lt. S.
Jukes, Lt. S.
Morris, Sec. Lt. C.
Pick, Lt. A. J.
WOUNDED.—Luther, Sec. Lt. H. G.; Marsden, Sec Lt. W
CADETS KILLED.—Bladwell, S. F.
Chapman, C.
Conlon, J. T.
Drewitt, O.
Hughes, J.
Millhouse, A. P.
Wheeler, G. R.
REPATRIATED.—Austen, Lt. V. G.; Bockett-Pugh, Lt. H. C. E.; Browne, Sec. Lt. H. W.; Clemons, Lt. H. S., Duce, Lt W.; Gilbert, Lt. C. G.; Gillan, Lt. C. J.; Gordon, Sec. Lt. C. A.; Green, Lt. E. G.; Harrington, Lt. H. R. D.; Hollis, Lt. A.; Hustwitt, Lt. S. A.; Lewis, Sec. Lt. D. G.; Lindsay, Sec. Lt. A. T. W.; Lomax, Sec. Lt. A. K.; McCann, Lt. C. M.; MacPhee, Lt. G. G.; Mercer, Lt. G. A.; Meredith, Sec. Lt. J. J.; Owen, Lt. R. J.; Parsons, Lt. C St. C.; Peiler, Lt. M. F.; Pickford, Lt. E. W.; Pope, Sec Lt. A. D.; Pruden, Sec. Lt. W. C.; Smithers, Sec. Lt. E. L.; Towne, Lt. L. L. F.; Westin, Sec. Lt. F. C.

Reported Dec. 12th.

KILLED.—Chapman, Lt. C. R.
Clarke, Sec. Lt. E. G.
O'Brien, Capt. H. D. S., M.C.
Sexton, Sec. Lt. E. Z.
Van Der Spuy, Sec. Lt. J. S. V. R.
DIED OF WOUNDS.—McKay, Capt. D. R. G.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—James, Capt. R. A.
Heyes, Sec. Lt. A. C.
Lipsett, Sec. Lt. R. S.
Mulhall, Sec. Lt. H. F.
Reid, Lt. J.
Swann, Sec. Lt. T. H.
Verex, Lt. L.
PRISONER OF WAR.—Coulthard, Lt. R.
REPATRIATED.—Bankes, Lt. H. V. N.; Brenton-Coward, Lt. G.; Gemmel, Sec. Lt. H. J.; Hardman, Capt. E. P.; Murphy, Lt. J. P.; Pearce, Lt. L. W. C.; Peckham, Lt. C. W.; Hesketh-Prichard, Capt. F.; Ratcliff, Lt. P.; Robinson, Lt. J. A. M.; Sellars, Lt. F. M.

Reported Dec. 13th.

DIED.—Barrett, Lt. J. H. P.
Collings, Sec. Lt. L. L.
Jackson, Capt. H. H.
McHay, Sec. Lt. F. H.
Patton, Lt. T. K.
Shead, Lt. S. G.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Goodman, Lt. G. A.
PREVIOUSLY REPORTED MISSING, NOW REPORTED DIED OF WOUNDS.—Welchman, Capt. P. E., D.F.C., M.C.
PREVIOUSLY REPORTED MISSING, NOW REPORTED WOUNDED AND PRISONERS OF WAR.—Inglis, Capt. A. G.
Shook, Lt. F. K.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Bruce, Sec. Lt. A. P. C.
Davies, Sec. Lt. D. P.
Fair, Sec. Lt. V. A.
Reynolds, Maj. L. J. S.
PRISONER OF WAR.—Goodfellow, Sec. Lt S. J.
REPATRIATED.—Grinnell-Milne, Capt. D., Marsh, Lt. L., Munro, Sec. Lt. J.

Reported Dec. 14th.

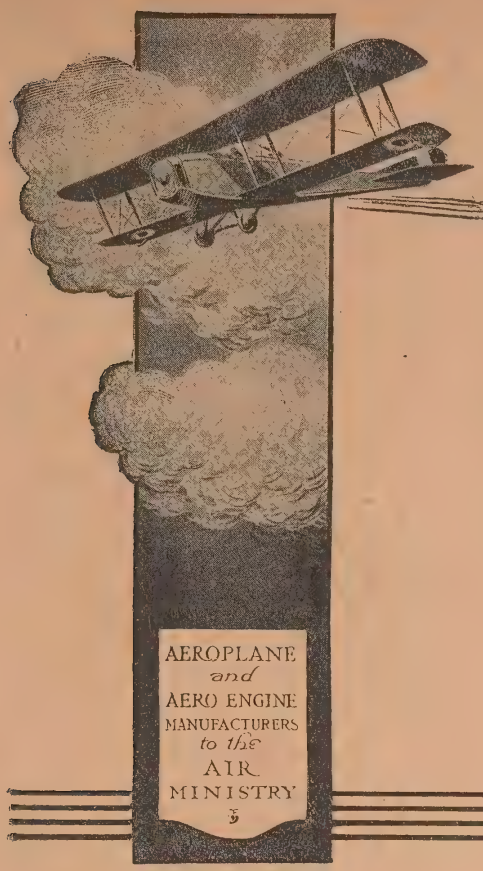
DIED.—Ashton, Capt. F. W.
Beesley, Sec. Lt. A. D.
Brennan, Sec. Lt. T. L.
Budds, Lt. P. H.
Hoyland, Sec. Lt. L. B.
Jenkins, Lt.-Col. L., D.S.O.
Mawer, Sec. Lt. J. B.
Mercier, Sec. Lt. H. B.
Sayers, Lt. P. L.
Strong, Sec. Lt. R. A.
Tomkinson, Sec. Lt. H. C.
Trelease, Maj. R. A.
Wright, Lt. W.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Allan, Sec. Lt. C. M.
Case, Sec. Lt. B. S.
Coleman, Sec. Lt. J. P.
Lewis, Sec. Lt. H. G.
MacLean, Sec. Lt. M.
Prime, Sec. Lt. H. L.
REPATRIATED.—Burnie, Lt. A. I., Cairn-Duff, Lt. A., Castle, Lt. J. S., Crabbie, Lt. W. M., Crosbie, Capt. D., Farmilli, Capt. G. C., Gladstone, Lt. C. A., Goodson, Capt. A. R. L., Grantham, Capt. V. M., Gray, Capt. K. W., Hunt, Capt. P. B. G., Knight, Lt. C., Maxwell, Lt. G. E., Phelan, Lt. W. M., Scholefield, Lt. E. R. C., Scott-Brown, Lt. W. A., Slade, Lt. R. T., Somervell, Lt. W. E., Spratt, Capt. N. C., Stubbs, Sec. Lt. H. B., Talbot, Lt. F. W., Weir, Capt. A. G., Wilkin, Sec. Lt. B. O., Wilson, Capt. C. B., M.C.

Reported Dec. 16th.

WOUNDED.—Houston, Lt. E. R.
PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.—Kennedy, Sec. Lt. J. G.
Scroggie, Lt. L. C.
Stockwell, Sec. Lt. L. G.
REPATRIATED.—Andrews, Lt. F. C., Atkins, Sec. Lt. G. C., Bennett, Lt. C. D., Bevington, Lt. R. J., Chreiman, Lt. W. W., Connolly, Lt. S. D., Dandy, Sec. Lt. J. M., Dobeson, Lt. R. G., Dunn, Sec. Lt. M. A., Edsted, Lt. F., Fleming, Lt. J. A. M., Garrity, Lt. W. J., Gorman, Lt. G. W., Harvey, Lt. G. S., Holleran, Capt. O. C., Hollingsworth, Lt. R. L., Kidder, Lt. W. S. G., Larabee, Lt. E. P., McCouchie, Lt. T. L., Morgan, Lt. R. J., Pineau, Lt. C. F., Robertson, Lt. G. M., Slee, Sec. Lt. F. D., White, Lt. R. E., Winkler, Lt. M. H.

Reported Dec. 17th.

KILLED.—Craddock, Sec. Lt. H. C.
McConnell, Sec. Lt. D. E.
Richardson, Sec. Lt. T.
Warren, Sec. Lt. E. D.
PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Walford, Capt. W. G.
REPATRIATED.—Atkins, Capt. B. S., Bartlett, Lt. A. F., Floyer, Capt. E. A., Hackman, Capt. T. R., Heriot, Capt. C. A. M., Herring, Lt. G. E., Senior, Sec. Lt H. H., Ward, Lt. A., Wells, Capt. T. R., Wellman, Lt. J. B., Wingfield-Smith, Capt. S. C.



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CASUALTIES AMONG W.Os., N.C.Os. AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

DEC. 11th.—Avery 111020 3rd Air Mech J. S. (Glasgow); Scott 142733 3rd Air Mech. J. A. (Ashington).

DEC. 12th.—Hanson 91575 3rd Air Mech. W. (Buenos Ayres); Linley 197854 3rd Air Mech. E. (Leeds); Robson 405270 3rd Air Mech. W. (Strand, London), Turnbull 104559 3rd Air Mech. D. (Edinburgh).

DEC. 14th.—Perry 610018 Cpl. A. (Leicester).

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.

DEC. 11th.—Newbury 64066 3rd Air Mech. W. (East Dulwich); Tate 104027 3rd Air Mech. G. H. (Dalston).

WOUNDED.

DEC. 12th.—Clements 135238 3rd Air Mech E. (Staines); Gibson 176662 Serjt.-Mech. W. (Galston); Ireland 130652 1st Pte C. (Tweedsmuir); Line 62660 3rd Air Mech. F. W. G. (Hammersmith); Parker 135000 2nd Pte. J. (Ayr); Reader 36078 2nd Air Mech. H. (Farnborough); Riley 10540 1st Air Mech. G. T. (Clapham); Stammers 134714 3rd Air Mech. E. A. (London, S.W.).

DIED OF WOUNDS.

DEC. 11th.—Knowles 402791 2nd Air Mech. H. (Little Lever); Waters 25701 2nd Air Mech. R. (Fleggburgh).

DEC. 14th.—Arden 94590 2nd Air Mech. G. (Manchester); Loughead; 401783 1st Air Mech. A. (Gorton).

DIED.

DEC. 11th.—Aikin 105136 3rd Air Mech. H. (Burnley); Briggs 203007 Serjt.-Mech. S. (Brighton); Caddick 63135 3rd Air Mech. W. G. (Canning Town); Dodson 178135 Serjt.-Obsr. A. L. (Quarry Bank); Elliott 21618 2nd Air Mech. G. (Leeds); Faulkner 76068 1st Pte. T. L. (Binxton Wharf); Graham 406644 Serjt. R. (Chopwell); Hobday 20275 Serjt-Mech. J. E. (Kingsheath); Holley 94769 1st Pte. D. J. B. (Hastings); Horsburgh 17998 Cpl.-Mech. J. S. (Glasgow); Johnson 303573 2nd Pte. R. (Birk); Morgan 86152 2nd Air Mech. J. (Pyle); McIntosh 227505 Cpl.-Mech. J. (S. Kensington); McMillan 168353 3rd Air Mech. G. S. (Bootle); Read 100787 2nd Pte. S. S. (Charlton); Roberts 118643 2nd Pte. D. (Leithfaen); Ruddick 220729 2nd Air Mech. S. L. (Gateshead); Steele 53063 2nd Air Mech. R. M. (Glasgow); Stewart 2146 Ch.-Mech. R. M. H. (Broughty Ferry); Todkill 66721 1st Pte. J. W. (Chorlton-on-Medlock); Wells 77611 3rd Air Mech. A. W (Acton).

DEC. 12th.—Baker 40202 1st Pte. S. A. (Highams Park); Bryant 11271 1st Air Mech. R. W. (Swindon); Cawston 43934 1st Pte R. W. (Croydon); Clark 43949 1st Air Mech. B. (Balsall Heath); Cock 24218 2nd Air Mech. F. L. (Linthwaite); Dolphin 204472 Serjt.-Mech O. (Birmingham); Dowsett 51094 Cpl.-Mech. F. J. (Rotherhithe); Eyre 235246 Serjt.-Mech. A. J. (Lower Stoke); Fletcher 30566 1st Air Mech A. E. Birmingham); Fuller 38402 Cpl.-Mech. F. (Hythe); Gibson 134696 2nd Air-Mech. A. (West Bridgford); Harding 16746 1st Air Mech. (Act. Cpl Mech.) C. T. G. (Southsea); Hardy 130635 2nd Pte. J. (Oldhill); Heath 2463 Cpl.-Mech. H. (Fitchfield Common, near Fareham); Seline 120509 1st Pte. J. (Richmond, Yorks); Summers 405128 3rd Air Mech. J. W. (Doncaster).

DEC. 13th.—Berry 109081 2nd Pte. D. W (Walworth, S.E.); Bibbings 104997 3rd Air Mech. A. W. (Cardiff); Blair 64937 1st Air Mech. H. (West Kilbride); Brunsden 21571 1st Pte. (actg. Cpl) C. S. (Westcliff-on-Sea); Grimbly 89627 2nd Air Mech. F. C. (Canonbury Road, N.); Hicks 31421 Serjt.-Mech. W. (Lower Clapton); Hull 406438 3rd Air Mech. D. C. (Southwell, Bristol); Key 57776 1st Pte. (actg Cpl.) J. G. (Great Yarmouth); Marsh 57834 1st Pte. E. W. (Stoke Newington); Mawdsley 44321 Serjt.-Mech. L. (Oswaldtwistle); Mills 61573 1st Pte. S. (Stockport); Osborne 91514 3rd Air Mech. W. J. (Radcliffe, E.), Reynolds 192408 3rd Air Mech. A. S. (Hammersmith); Staton 95235 1st Air Mech. J. (Bolton); Wills 42365 2nd Air Mech. A. H. (Glasgow).

DEC. 14th.—Foster 404110 1st Clk W. E. (Pontypridd); Jones 209983 2nd Pte. G. (Llandinan); Leonard 9961 3rd Air Mech. G. H. (Kilburn); Lewis 158115 2nd Air Mech. J. (London, N.); Myles 103094 Cpl. T. (Paddington, London); Payne 3486 2nd Air Mech. C. (Odiham); Piggins 109526 3rd Air Mech. S. J. (Wisbech); Rhodes 5262 Cpl.-Mech. J. H. T. (Brighton); Skinner 185579 3rd Air Mech. W. (Paddington, London); Surridge 28535 Cpl.-Mech. W. (Southampton); Turner 194160 2nd Pte. R. S. (Fulham); Valentine 184984 2nd Pte. J. (Johannesburg); Wilson 112800 3rd Air Mech. J. (Helensburgh).

MISSING.

DEC. 13th.—Kent 163247 3rd Air Mech. F. R. (Bristol); Lear 22902 Cpl.-Mech. (actg. Serjt.-Mech.) J. (Hull); Smith 21110 Serjt.-Mech. G. A. (Bradford, Yorks); Timbrell 162322 3rd Air Mech. A. (Nailsworth); Williams 131859 3rd Air Mech. H. J. (Wood Green, N.); Wing 3433 Serjt.-Mech. A. J (Fareham, Hants).

DEC. 14th.—Purling 409129 Serjt.-Mech E. J. (Norwich).

DROWNED.

DEC. 14th.—Pearce 108475 1st Pte. J. (Penrith).

PREVIOUSLY REPORTED MISSING, NOW REPORTED PRISONERS OF WAR.

DEC. 13th.—Jex 12698 Serjt. A. (Peterborough, Northants); Ovens 25013 1st Pte. L. C. (Parton, Wilts); Wilding 100000 Serjt.-Mech. J. (Warrington).

PERSONAL NOTICES.

MILITARY.

DEATHS.

BARCLAY.—Capt. Fergusson Barclay, R.A.F., who died on Dec. 7th, at Harling Road Hospital, Norfolk, as the result of an aeroplane accident, aged 41, joined the Somerset Light Infantry on the outbreak of war, was transferred to the R.D.C., and afterwards attached to the R.A.F. He was the eldest son of the late Capt. H. F. D. Barclay, late 43rd Regt., and of Mrs. Barclay, of Manor Mead, Weston-super-Mare, and was educated at St. Peter's, Weston-super-Mare, and at Malvern College.

DOUGLAS.—Capt. Brian Charles O'Driscoll Douglas, R.A.F., the only son of Mr. and Mrs. James Douglas, whose death was announced a few weeks ago, was born on Sept. 6th, 1894, and educated at Copthorne School and Winchester (1909-1912). After studying German in Hanover, he entered the Royal Military College, Sandhurst (F Co.), on Sept. 3rd, 1913. On Sept. 30th, 1914, he was gazetted to the Connaught Rangers, and after serving in France he transferred to the Royal Flying Corps in December, 1916. He was given his wings, and flew to France in April, 1917. During his third week as corps pilot he brought down two German aeroplanes. The following is an extract from the official communiqué, dated Nov. 7th, 1917:—"An R.E. 8, of No. 5 Detached Flight, while on photography with an escort of two scouts, was attacked by six enemy aeroplanes. Capt. Douglas and Lt. Whitehead in the R.E. 8, with the help of the two scouts, drove off the enemy aeroplanes, one of which went down in a nose dive. The observer of the R.E. 8 was wounded in the foot, and the machine riddled with bullets." On Oct. 5th last Capt. Douglas at his own request, was transferred to scouts, and at once asked to be sent out with a new squadron going to France on Oct. 30th. He was killed at Hounslow on Oct. 21st while looping the loop the third time.

DRAKE.—Lt. Ernest Francis Drake, R.A.F. (late Cheshire Regt.), who died at a nursing home at Birkenhead on Dec. 10th, was the eldest son of the late Sidney Drake, Esq., and of Mrs. Drake, "Ellan Brook," Brooklands, Cheshire. He was 23 years of age.

EYRES.—Sec. Lt. Henry Tarrant Eyres, the Queen's Regt., attd. R.A.F., whose death was announced recently, was 19 years of age, and after passing through Sandhurst obtained a commission in the Royal West Surrey Regt., and later transferred to the R.A.F. According to a letter received by his father, Mr. Ernest Eyres, of Orchard Leigh, Bloomfield Gardens, Bath, Mr. Eyres had been bombing over the German lines on the night of Nov. 9th, and his machine crashed to earth as he was returning. He was 35 miles from his destination, and appeared to have missed his way a little. The aeroplane was seen to come down. Mr. Eyres and the pilot were instantaneously killed.

GONNE.—Capt. M. E. Gonne, M.C., R. Fus. and R.A.F., who was reported missing on Aug. 8th, is now believed to have died of wounds. He was the younger son of Mr. and the late Mrs. Gonne, of the Homestead, Ringwood, and was educated at Westminster and Sandhurst. Early this year he was awarded the Military Cross after eight months' continuous service in France. He returned to France in August at his own request to take part in the great offensive, and was last seen over the Somme crossing at Brie, then 15 miles behind the German lines. Private advices state that he died in the Villers Carbonnel Field Hospital. He was 19 years of age.

HORRIDGE.—Capt. John Leslie Horridge, R.A.F., whose death was announced recently, was educated at Uppingham School (1910-15), and was previously at the Preparatory Lower School, Uppingham. He was a member of the football XV and cricket and hockey XIs, and a school praepostor. In 1915 he passed into Pembroke College, Cambridge, but did not take up his studies. He applied for a commission in the R.A.F., and while waiting to receive it he joined the Grahame-White Flying School, and took his certificate in November. On receiving his commission in January, 1916, he went into training at the Curragh, and afterwards at Ruislip, taking his wings on May 21st. He went to France on May 25th, where he was attached to No. 7 Squadron, and later to No. 4 Squadron. In January, 1917, he was made flight commander. He returned to England in June of that year, and was in the Home Defence Wing on the South-East Coast until June, 1918, most of the time with No. 37 Squadron. Latterly he was with a squadron mobilised for overseas, whither he expected to proceed at an early date.

O'BRIEN.—Capt. Humphrey D. Stafford O'Brien, M.C. (and bar), 1st Northamptonshire Regt., attd. R.A.F., was accidentally killed on Sept. 14th last in Mesopotamia. He passed into Sandhurst and was gazetted to the Leicester Regt., which he joined in India in 1908, remaining there for nearly three years. He then obtained an exchange to the 1st Northamptonshire Regt. In 1912 he was seconded for service with the Nigeria Regt. (West African Frontier Force), and when the war broke out, being then on leave, he was recalled and served in the operations in the Cameroon till he was severely wounded in the knee and invalided home in April, 1915. For his services he was specially mentioned in dispatches by Major-General Dobell and awarded the Military Cross (one of the first to obtain that decoration) in December, 1914. In January, 1916, he was temporarily attached to the 6th Leinster Regt. at Salonika, and there was awarded a bar to the Military Cross for conspicuous gallantry in action. He carried out a valuable reconnaissance under heavy fire, himself killing one of the enemy and capturing a prisoner, setting a splendid example of courage and initiative. In September, 1917, he proceeded to Egypt with the Leinster Regt., and there joined the Royal Flying Corps, obtained his wings last April, and was transferred to Mesopotamia for temporary service in July. Capt. O'Brien was the son of the late Lucius Stafford O'Brien, of St. Johns, Fahan, Co. Donegal, and grandson of the late Henry Stafford O'Brien Stafford, of Blatherwycke Park, Northamptonshire, and grandson of the late Henry Sarell Ongley, of the Diplomatic Service.

PEARCE.—Maj. Sydney M. Pearce, Leicestershire Regt. and R.A.F., who died on Dec. 6th at Sellindge, Kent, was the younger son of Mr. and Mrs. E. J. Pearce, Winchester. He was 28 years of age.

PICK.—Lt. Alfred James Pick, 3rd D.L.I., attd. R.A.F., who was killed on Dec. 2nd in a flying accident at Eastchurch, was the eldest son of Alfred and Ellen Pick, of Bedlington. He was 23 years of age, and had seen service with the 1st K.O.Y.L.I. in France, Egypt, and Salonika, also with the R.A.F. in Salonika and Egypt.

RONALDSON CLARK.—Lt. R. A. Ronaldson Clark, M.C., R.F.A., attd. R.A.F., who was killed while flying on Oct. 19th, was the son of Lt.-Col. and Mrs. Ronaldson Clark, Cricklewood, Brayhill, Douglas, I.o.M. He was 24 years of age.

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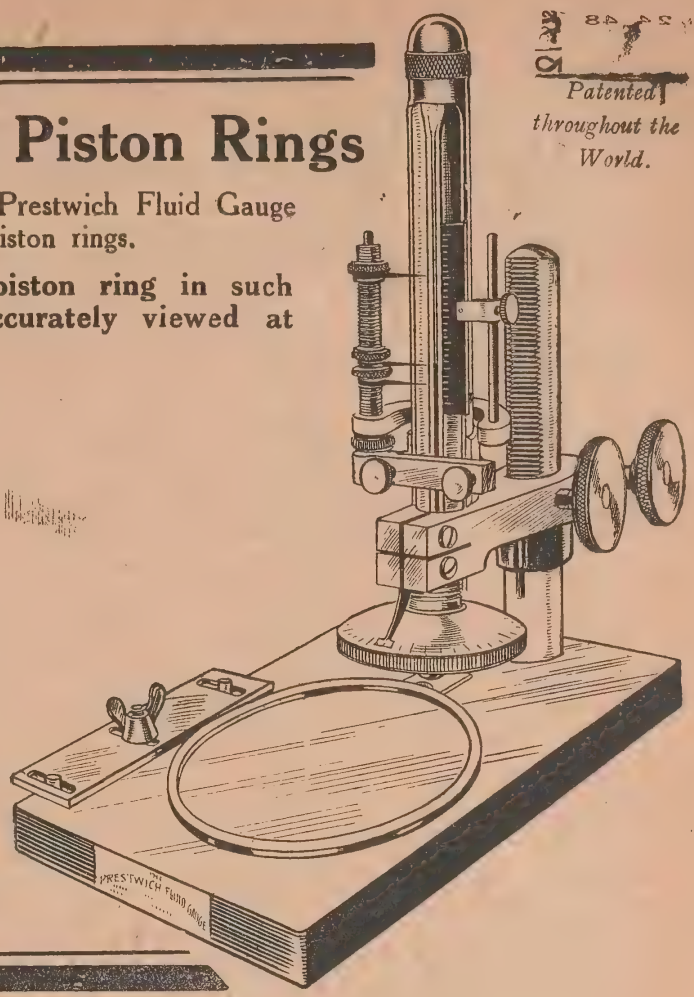
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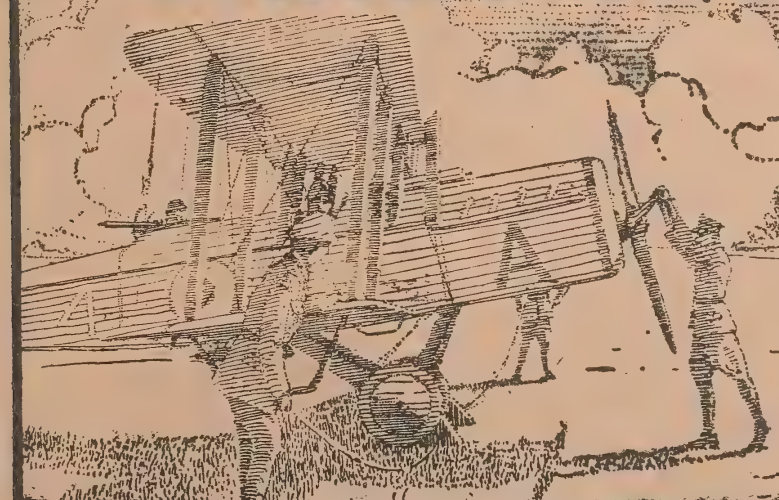
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RUMSEY.—Capt. Reginald Rumsey, Welch Regt. and R.A.F., has died at Gosport as the result of burns and other injuries received while flying.

Capt. Rumsey, who was aged 28, was the only son of Mr. W. English Rumsey, of Shrewsbury, and was educated at Ellesmere College. He was in the sanguinary fighting at Mametz Wood, and afterwards was promoted captain, and transferred to the R.A.F., in which he did some brilliant observation work over the German lines. He was a well-known footballer and amateur athlete in the Border counties.

TUPMAN.—Sec. Lt. Arthur Lyon Tupman, Sherwood For., attd. R.A.F., who was previously reported missing on Aug. 22nd, is now reported to have been killed over Bonfay. He was the eldest son of Lt.-Col. J. A. Tupman, R.M.L.I., and Mrs. Tupman. He was 19 years of age.

WELCHMAN.—Capt. Patrick Eliot Welchman, M.C., D.F.C., K. O. Sco. Bordrs. and R.A.F., died on Nov. 29th at No 42 Stationary Hospital, Charmes, France, of wounds which had been neglected in the German hospital at Metz. He was the son of the late Eliot W. Welchman, of Lichfield, Staffs.

Engagement.

WATSON—SORBY.—The marriage arranged between Capt. Graham L. Watson, 7th W. Yorkshire Regt. and R.A.F., and Miss Dorothy Sorby took place at St. Mary Abbot's, Kensington, on Dec. 18th.

Marriages.

FALCK—STARLING.—The marriage between Lt. Lionel Falck, R.A.F. (late Kite Balloon Section, R.F.C.), and Miss Kathleen Starling took place recently at Norwich.

FRANKLIN—DENNEHY.—On Dec. 10th, at St. Thomas's Church, Fulham, Lt. Arthur Joseph Franklin, R. Dub. Fus. and R.A.F., youngest son of Mr. and Mrs. R. T. Franklin, of Ewelme, Wallingford, was married to Eileen Ursula, daughter of Dr. and Mrs. P. R. Dennehy, of Lismore, Co. Meath, Ireland.

STREATFEILD—BOOTH.—On Dec. 11th, 1918, at Holy Trinity Church, Brompton, Capt. G. H. B. Streatfeild, M.C., R.A.F., younger son of Maj. and Mrs. H. S. Streatfeild, of Ryhope, Co. Durham, was married to Marjorie, younger daughter of Mr. and Mrs. Charles Booth, of 10, St. Bede's Terrace, Sunderland.

Births.

BANYARD.—On Dec. 6th, at 157, Queen's Road, Buckhurst Hill, Essex, the wife of Lt. Harold J. Banyard, R.E., attd. R.A.F.—a daughter.

BOOTH.—On Dec. 11th, at 4, Whitfield Road, Forest Hall, the wife of Lt. C. A. S. Booth, N. Staffs, attd. R.A.F., of a son.

GORDON-SMITH.—On Dec. 12th, at 2, Nottingham Place, W., Barbara, wife of Capt. S. B. Gordon-Smith, M.C., R.A.F., of a daughter.

NICHOLSON.—On Dec. 7th, at Grange Avenue, Leeds, the wife of Capt. Kenneth Nicholson, W. Rid. Regt., attd. R.A.F., of a son.

* * *

Sec. Lt. A. L. Tupman, Sherwood For. and 80th Squad. R.A.F., was flying Sopwith Camel F.1969. Any particulars regarding the manner of his death on Aug. 22nd over Bonfay will be gratefully received by Mrs. Tupman, Church Institute, Hipswell, Catterick Camp, Yorks.

* * *

Will any returned British prisoner who can give any information regarding Lt. H. Toulmin, M.C., R.A.F., who was posted missing from Sept. 17th, 1918, kindly communicate with Mrs. Toulmin, 56, West Cliff, Preston, Lancs.?

* * *

Among 2,000 repatriated prisoners of war who landed at Leith on Dec. 14th from Copenhagen was Capt. Leefe Robinson, V.C., who was brought down in aerial action over Douai in April, 1917. He has been in eight different internment camps.

AIR FORCE.

Deaths.

BOOTH.—Sec. Lt. Sydney Edwin Booth, R.A.F., who was killed on Dec. 3rd in a flying accident in France, was the husband of Winifred Booth (née Cowen) and only son of Mrs. E. Booth, of 4, Manor Grove, Beckenham, and of the late Mr. Edwin Booth, of Scotts Lane, Shortlands. He was 23 years of age.

GILLMAN.—Sec. Lt. Bernard Chute Gillman, R.A.F. (of Garing Estate, Malacca), who was reported missing on Sept. 24th, is now known to have been killed on that date at Aulnoy, near Cambrai. He was the fourth son of the late John and of Mary A. Gillman (now Mrs. G. H. Llewellyn, Park Lodge, Alperton, Middlesex). He was 25 years of age.

LLOYD and RICE.—Flt. Cadet Alan Edward Lloyd, R.A.F., aged 20, of Knowles Hill, Newton Abbott, and Flt. Cadet Edward James Rice, R.A.F., aged 19, of Homefield Place, Heavitree, Exeter, were killed on Dec. 14th in separate accidents while they were making flights from a Flintshire aerodrome.

WEALE.—Sec. Lt. Frederick Hubert Archibald Weale, R.A.F., who was reported missing on Oct. 2nd, is now believed to have been killed in action. He was the nephew of Lt.-Col. H. Cornes, D.S.O., R.F.A., and Mrs. Hugh Cornes, Rivermead, Hampton Wick, and was 19 years of age.

Engagements.

BIRD—BARTON-FRENCH.—An engagement is announced between Maj. Augustus Wieland Bird, D.S.O., R.A.F., and Clarice, the only daughter of Mrs. Barton-French, of Paris, and 3, Albemarle Street, London.

FORBES—PICOT.—A marriage has been arranged, and will shortly take place, between Lt.-Col. J. L. Forbes, R.A.F., son of the late Capt. J. A. Forbes, R.N., and Mrs. Forbes, of West Coates, Berwick, and Marjorie, widow of Capt. Picot, and third daughter of Sir Thomas and Lady Putnam, of Greylands, Darlington.

MORE—PARKER.—The marriage arranged between Brig.-Gen. Robert Henry More, C.M.G., R.A.F., and Miss Phyllis Blanche Parker will take place at St. Peter's Church, Eaton Square, on Thursday, Jan. 16th, at 2.30.

PRETYMAN—HEARD.—The engagement is announced of Lt.-Col. George Frederick Pretyman, D.S.O., R.A.F., eldest son of the late Maj.-Gen. Sir George Pretyman, K.C.M.G., C.B., and of Lady Pretyman, 17, Morpeth Mansions, S.W., and Maureen, daughter of Col. and Mrs. E. S. Heard, of 1a, Collingwood Road, S.W.

SCHOLEFIELD—SEYMOUR.—The marriage arranged between Lt. Edward R. C. Scholefield, R.A.F., son of Mrs. Jay, of 41, Bramham Gardens, S.W., and Dorothy Helen, daughter of Mr. C. R. Seymour, of Bereweeke House, Winchester, will take place on January 15th.

WRIGHT—MIELL.—A marriage has been arranged and will shortly take place between Capt. Frederick Clive Avery Wright, R.A.F., eldest son of the late John Frederick Wright and of Mrs. Wright, of Frimley Hall, Camberley, Surrey, and Dorothy, second daughter of Mr. and Mrs. T. Miell, of Red Thorn Hill Lane, Southampton.

Marriages.

GRIMES—POWELL.—On Dec. 12th, at Newport Pagnell Parish Church, Capt. E. C. Grimes, R.A.F., eldest son of Mr. C. C. and Mrs. Grimes, of Dulwich, London, was married to Ida Mary, elder daughter of Mr. W. J. Powell, M.R.C.V.S., and Mrs. Powell, of Newport Pagnell, Bucks, by the Rev. F. B. Gunnery.

MURRAY—KELLER.—On Dec. 12th, at the Parish Church, Hampstead, by the Rev. Canon Sheppard, Sub-Dean, Chapel Royal, Capt. Denis G. Murray, R.A.F., son of Professor Murray, of Oxford, was married to Phyllis Evelyn, daughter of Mr. and Mrs. L. E. Keller, Newmount, Hampstead, N.W.

TRIGG—RUDGARD.—On Dec. 4th, at Herne Church, Kent, Capt. H. W. R. Trigg, R.A.F., only surviving son of the late Henry J. Trigg and Mrs. Mary C. Trigg, of Bournemouth, was married to Sibil Grace, only daughter of Fred and Ethel Rudgard, of Bridgnorth (late Manchester).

Births.

COLMAN.—On Dec. 2nd, at 21, Wain-a-long Road, Salisbury, the wife of Lt. E. Fraser Colman, R.A.F.—a daughter.

CORDWELL.—On Dec. 8th, at 10, Connaught Mansions, Battersea Park, S.W.11, to Dorothy, wife of Frederick George Cordwell, R.A.F.—a daughter (Joyce Dorothy).

COURY.—On Dec. 11th, at 34, Albert Road, Regent's Park, the wife of Capt. G. G. Coury, V.C., R.A.F., of a daughter.

CROUCH.—On Dec. 11th, Madame Goodman Crouch, wife of Capt. Goodman Crouch, R.A.F., at "Sunnymead," 15, Tunney Road, West Dulwich, S.E.21, of a daughter.

SHOOSMITH.—On Dec. 1st, at Southsea, the wife of Lt. W. M. Shoosmith, R.A.F., of a son.

* * *

Can any returned prisoner of war who was in hospital at Giessen give any news of Lt. C. B. Lefroy, R.A.F., who was last heard from on Sept. 30th, to Walter Lefroy, 1, Harley Gardens, South Kensington?

* * *

Lt. H. Good, 92nd Squad., R.A.F., was reported missing after an aerial fight, near Cambrai, on Sept. 5th, 1918. Any information from returned prisoners of war most gratefully received by Lady Desborough, Taplow, Bucks.

* * *

Capt. Brian L. Dowling, R.A.F., has been missing since Aug. 10th. Information will be gratefully received by his mother, Mrs. Dowling, 152, Brompton Road, S.W.3.

* * *

Will any returned British prisoner who can give any information regarding Lt. F. A. B. Gasson, R.A.F., and his observer, Sec. Lt. Stewart King, R.A.F., who were posted missing from Sept. 26th, 1918, kindly communicate with Mrs. Gasson, 85, Central Hill, Upper Norwood?

* * *

Sec. Lt. W. H. L. Halford, R.A.F., Obsr., and Lt. A. M. Stevens, R.A.F., Pilot, have been missing since Sept. 28th, 1918, on the Ypres Front. The machine they were flying was D.H.4, No. A7,849. Information earnestly desired by C. H. Halford, Woodlands, Manor Way, Beckenham, Kent.

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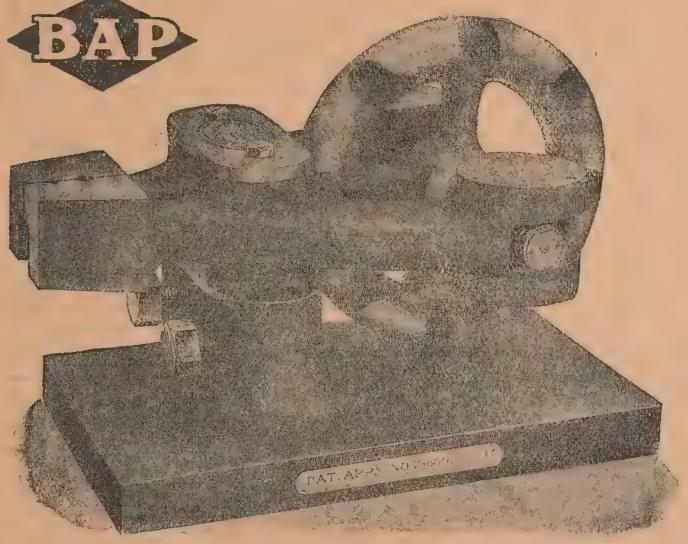
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SOME BOOKS TO READ.

THE BOMBING OF BRUGES.

(Captain Paul Bewsher, D.S.C., R.A.F.)
Messrs. Hodder and Stoughton. 5s. net.

The latest allotment-holder on Parnassus is Captain Paul Bewsher. I will gladly believe that the writer is a gallant soldier, but he is emphatically an *ersatz* poet. The composition from which the book takes its name is one long dull string of pentameters which drag past you two by two, like a six o'clock crowd waiting for the trams on the Embankment, some shuffling their feet to break the monotony.

" The raptured bridegroom on his wedding day—
Whom I must slay—alas!—whom I must slay. . . ."

In all his verses he has a maddening way of letting his muse take the controls for a few minutes, and just as she is doing well with it, wrench them away from her, and end up with some thundering banality, or ill-chosen, rasping word :—

" Drowned, drowned, dear God! Ah, I weep bitter tears,
And cry out madly to the heedless night!
Forgotten are my vivid pressing fears,
A far worse agony my soul must *bite*."

His Pegasus is a rocking-horse, listen to this :—

" For England's skies seem very dear to me—
I do not know what lies beyond the sea,
And in my little bed I'll sleep no more."

Touchstone made a few remarks about verse of this character, which I recommend to Mr. Bewsher's attention. Let him digest them, and then buy a shilling book on prosody, so that he may not permit himself such atrocities as :—

" Upon each leg I draw a heavy boot,
And wrap myself inside a fur-lined suit."

You might be tempted to think, as you read the book, that the writer has not the inner vision, and that he is merely wasting his time. This is not really the case; he simply has not troubled to learn the rules of the game, or master his medium. Where he aims at simplicity we get this sort of thing :—

" Follows my eye towards the fading line
Of gleaming cliffs. Dear country that is mine,
Soon, soon, will I return. . . I want you so!"

But when Captain Bewsher forgets for a moment that his friends esteem him a poet, when he is trying to let us have something that he has felt to the marrow of him, he can give us such a light, pretty thing as "The Death of Romance," a warning to—

" All you who love the sun-drowsed rose
Which over every cottage grows" :

to those who love the quiet hour when the bats—

"—begin
To flit and wheel across the eve,
And leathern toads the shadows leave" :

telling them to be well advised and never fly, lest the lane and the flaming copse should lose their colour, counselling them at parting :—

" Romance your happy days will fill
When life is hidden by a hill."

But for the rest it is Captain Bewsher's misfortune that where he would be imposing and Miltonic he is funny, and where he tries to conjure from his rustic reed pipe the eerie harmonies of Verlaine, he is funnier still.—R. H. B.

THE NAVY ETERNAL.

Bartimeus' hand has lost none of the old cunning in his new book, "The Navy Eternal" (Hodder and Stoughton. 6s.), but, in his matter, he is not quite so fortunate as was the case in the old days when he wrote "Naval Occasions," and at one step achieved literature.

No doubt, though, he is writing under some stress, and I am grateful for the introduction to the Nemesis of his youth on the training ship, Chief Petty Officer Harker—"who smelt out, like a Zulu witch-doctor, the grass snake and dormouse that lived a life of communistic ease and reflection in the washing-till of somebody's sea-chest, who possessed the suspicious mind that lead to official 'ruxes' of private tills, and the confiscation of meerschaum pipes, Turkish cigarettes, and other contraband, yet all this without any effect of espionage."

It appears that when the terms were landed for daily recreation Harker used to hover near the gangway, for the rules had it that all cadets not playing games must land wearing a particularly despicable form of undergarment, "a woolly and tucked-into-the-socks abomination that the soul of every right-minded cadet revolted from." The excellent Petty Officer would pounce upon a suspect :—

" 'Ave we got our DRAWERS on, Mr. So-and-So?" came the merciless query. On the return journey he would run an appraising eye over them for illicit butter-scotch, or wads of Turkish Delight. " There's a nasty swelling on your shin," he would say, " did ought to be seen to at once," and the piteous victim would have to hand over his provender. Obviously, they adored him. And he made men of them.

There is more than a touch, too, of the old Bartimeus, in some of the short shories in the beginning of the book :—

In the bows of the whaler the able seaman, with the boat-hook, sat regarding the captive of his bow and spear. "'Ere, Tirpitz!" he said, and, removing his cap, he produced the stump of a partly smoked cigarette. The captive took it with a watery smile, and pawed his rescuer's trousers.

"Kamerad!" he said.

"Not 'arf!" said his captor, appreciatively. "Not 'arf, you ain't, you . . . son of a . . . !"

The second bow, labouring at his oar, looked back over his shoulder.

"'Ush!" he said, reprovingly. "'E can't understand. Wot's the use of wastin' that on *'im*?" He spat contemptuously over the gunwale.

And the writer quotes the "thoughtful" description of the action, inverted and magnified, that came out in the German wireless communiqué next morning, commenting crisply—"Every man to his trade."

There are good stories of a submarine commander who follows a new German cruiser into harbour, counting the cost, but holding it cheap; and the last fight to a finish of a trawler. There is "bite" to these tales. I like the yarn of the Methody fishing-boat that looses off her gun at the British submarine, misses, and hand-flags: "Thank God, I didn't hit you." "Amen!" comes the reply, and then, after a moment or so: "What did *you* do in the Great War, Daddy?"

But the pearl of the collection, a very human and beautiful thing, is the story, "Mystery," the tale of a Commander, who, having fought a good fight, takes his unknowing wife—(so sympathetically drawn that one seems to know her)—with him to receive his decoration. This is really quite moving; I will not spoil it by quotation, to tear away shreds of the fabric to show you would be a pity, and would give you no idea of the whole.

When he treats of " The-Navy-that-Flies " (this, and others among the sketches, have appeared in the daily Press), Bartimeus is not so happy, and is even given to error. For instance, he informs us that "Quirks" are immature Hun pilots, though it is true that Quirks were, in the R.N.A.S., immature pilots, and that the R.F.C. called the same people "Huns," because of the frightfulnesses which they committed on their machines. The picture lacks relief, and misses conviction. The scrappy gleanings in his hands have not sufficed to do justice to his subject, and he is no longer the expert, talking with charm and authority on matters well known to him.

Very much better is the series of impressions of the American battleships in "Ultima Thule." Here craftsmanship is evident. Even where he descends to journalese, it is always good, readable journalese, and the book is not one to miss. But he is far too good for superior hack-work, and I hope very much that he may leave these easy paths, and give us of his honest best again.—R. H. B.

PAINTING BY IMMERSION.

I remember reading a while ago the story of a struggling artist, who had succeeded in putting his art on a quantity production basis. He would procure a dozen virgin canvasses, nailing them to the walls of his garret-studio. Then, with a well-charged palette, he would walk down the line dashing in a series of twelve beetling cliffs. On the return journey he would top each cliff with a light-house. A dozen ultramarine seas would ensue, each with an appropriately becalmed boat. Gulls were scattered about prodigally, these are easy to do. Two deft strokes of a brush charged with sepia, and there's your gull! He used to sell these horrors to a dealer at three and sixpence apiece.

But this was before the days of the airbrush, and no doubt Mr. Arthur S. Jennings, the author of "Painting by Immersion and Compressed Air" (E. and F. N. Spon, Ltd., 10s. 6d.) could have bettered his methods; and certainly, to judge by the illustrations in the volume, could have produced even more luscious effects.

Such a book should be of the greatest service to manufacturers who are desirous of ascertaining whether these processes can be profitably employed in their particular industry. The economy and obvious rapidity attained by the use of spraying machines has already been recognised to a large extent by aeroplane manufacturers, particularly in America; but it must be conceded that Mr. Jennings' volume contains many suggestions for further applications of this process which would not ordinarily occur to the user of such a plant.

Manufacturers handling large quantities of small repetition parts will be particularly interested in the chapter on painting by immersion, which covers scientifically and methodically the difficulties which arise in respect of the choice of paints to be employed, drying, filling, and rubbing down. The requirements of a good dipping paint, the specific gravity of pigments, proportions of paint and thinners which should be sought, the use of asbestine, china clay, and whiting; these and similar recondite

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matters are handled in the light of an obviously considerable experience.

As for painting by compressed air, the writer treats exhaustively concerning the several forms of apparatus in vogue, and offers useful suggestions as the correct flow of paint, and the pressures which it is advisable to employ.

A very interesting development of the art, which the writer indicates at some length, is that of metal spraying, by which a coat of metal may be applied to practically any surface; and almost any metal or alloy may be employed. Stated briefly, the process consists in melting metal in the form of a rod or wire, by means of oxygen and coal-gas. The molten metal is sprayed at high pressure, and a surface may be quickly covered with metal of any desired thickness. A remarkable fact concerning the process is that the metal is cooled to an extent that renders it possible to hold the hand in the jet so as to receive a coat of metal without inconvenience, and wood and fabric may be coated with metal without injury.

Obviously there should be an immense field for this process; for instance, aluminium might be sprayed, thus proofing metal against rust and corrosion; and experiments are now being conducted in connection with the copper coating by spray of ships' bottoms to prevent incrustation. The process has the added advantage of economy, and ten square feet of surface may be coated with zinc for as little as fourpence.

Aerostyle plants are rapidly becoming universal, and the manufacturer who, in the words of Turner's much quoted aphorism, wishes to "mix his colours with brains," would do well to study this volume closely.—R. H. B.

AEROPLANE CONSTRUCTION AND OPERATION.

You will remember how in the 97th year of his age the holy Saint Maël set out in a stone boat to bring back to the fold certain spirits of the Abbey of Yvern, reputed backsliders. You will remember, too, how, after an adventurous transit, the excellent man baptised an assemblage of penguins in the Southern Seas, his failing sight causing him to mistake them for men. Whereupon the high gods had no option but to turn them into human beings, when they lived in a state of grace (i.e., unembarrassed by clothes) until the untimely advent of the Devil, disguised as a monk, and quoting endlessly from Holy Books.

It was this wicked spirit who represented to the saint that it would be better for his artless communicants to be clothed. To further this end he selected a lady-penguin who chanced to walk along the sands, meditatively scratching her back, a plain girl—"whose great-toes curled upwards from the sand as she moved, like the heads of two serpents full of prudence." The crafty monk extemporised a toilette from materials near at hand. The she-penguin, thoughtful but interested, offered no opposition, and when he corsetted her: "You can lace a little tighter!" said she. When all was finished, the effect upon the he-penguins was devastating. I cannot tell you the rest of the legend, you must read it for yourself—in the French!

The surprising and speckled career of the newly-decorated maid, her reincarnation as the Virgin Oberose, a saviour of her country, her adventures with Kraken, a primitive Talleyrand, the dragon they made out of reeds and cloth, which breathed burnt tow out of its nostrils, and terrorised the countryside: you should read these to the end, when Oberose, "being no longer beautiful, consecrated herself to God."

The origin of the idea of property in this pristine community is charming, too. Greatauk, a powerful man, snatches the lettuces of a lesser penguin, and saying "Thy field is mine!" cracks his skull unconcernedly, the assembled priests approving. And when the imposts were levied, this Chief Greatauk made the brief declaration: "Being noble, I shall not contribute, for to contribute is ignoble. C'est à la canaille de payer—Let the herd do the paying!" So was born Aristocracy, and the New World. . . .

From that New World across the ocean which they call the "Big Drink" comes a new book, "Aeroplane Construction and Operation," by one J. B. Rathbun (Stanton and Van Vliet, Chicago). It is, perhaps, more eclectic than original, but contains a mass of useful mathematical data enabling calculations for surfaces, power, weight, etc., to be worked out by the student. The instruction is so graded that ordinary fifth-form mathematics should enable readers to apply the principles to their own work.

The author traces the development of the modern machine from the times of attempted ornithopter and helicopter flight; and the chapter on elementary aerodynamics is distinguished by a clarity not too often encountered. A section on experimental laboratories treats in some detail of wind tunnels, and the tests of M. Eiffel, and the N.P.L. and M.I.T. laboratory. The laws of air flow about aerofoils, incidence, lift-drag ratio, are lucidly explained, and the chapter on practical wing sections, instancing many English and American types, while in many respects ahead of matter usually presented in pocket volumes, is expounded in simple language.

In fact, this is the leading characteristic of the volume: that it deals with matters bordering on the abstruse in language readily comprehensible.

Stability—static and dynamic—centres of gravity, thrust, lift and area, surface calculations, and the laws affecting inherent stability, all these debatable matters are covered; and a not inconsiderable section is devoted to airscrews, aeronautical motors, and operation and training methods.

As far as is possible within the confines of 400 pages, the writer has straddled an immense and ever-growing field, and his compendium, which is well illustrated (with the exception of the photographs, which are inclined to be fuzzy), should be of real use to folk who do not possess a large aeronautical library, and therefore would wish to avail themselves of a volume which presents a very considerable mass of information in a very compact form.—R. H. B.

CARBURATION.

Just before my sixteenth birthday I decided that life was barren and drear indeed without a motor vehicle of some kind, and represented to my dubious parents that if they would provide the derisory sum of thirty shillings I could purchase a speedy and luxurious machine with it. After a certain amount of moral suasion I was able to hand the money over to an indulgent cycle-maker, who wanted the room that my coveted 1½ h.p. front-drive Werner motor-cycle took up. This on the understanding that I was to do all repairs and tuning up in his shop and with his materials!

She was a weird little machine, but willing. With the collusion of another earnest enthusiast I started to tune her. We borrowed a drill, and percolated the piston until it looked like a honeycomb. The exhaust arrangement, of course, we scrapped (she had a bang like a soixante-quinze), and the pedalling gear went by the board. Many a happy afternoon we spent on Paddington track (admission sixpence) trying to make her do better than thirty miles an hour.

We even went to the length of borrowing a cobweb of a wheel from a racing bicycle, with a slim wood rim, spokes like hairs, and a tyre about as thick as a postage stamp, which we inserted in little Werner's frame. An indulgent Providence preserved our young lives through all of it.

Resourceful as we were though, we could never evolve a means of tuning that surface carburetter, which drew its mixture through the handle-bar, and even clever Maor Brewer, who has just sent out a revised issue of his book, "Carburation" (Crosby, Lockwood, 12s. 6d.), could have done nothing to help us. (I notice he touches on the old Longuemare, for which instrument most old hands still have a sneaking affection.)

A book such as this is the more valuable now that hit-and-miss principles in carburation have been discarded, and a mass of data has been compiled which forms a solid basis for future experimenters to work upon. Scientific application has been rendered necessary by the poor quality of present-day fuel, and "the public demand for wide range of engine speed, controllability, and quietness." (Naturally the writer has in mind the motor-car engine, aero-engine practice is only touched on in this book *en parenthèse*.)

Nevertheless, this is a book which the aero-engine constructor would be well advised to keep ready to his hand. Without divagating unduly into such fascinating by-paths as induction pipe design and the like, the author has set out in compact form the result of much original experimentation, which will be all the more welcome because of the known paucity of information of this kind. Not only does the book elucidate the principles of carburation, but from the matter which it contains it should be possible to effect economies in working, and many hours of labour shou be saved by those who avail themselves of the data contained therein.

Most of the well-known carburetters are illustrated and commented upon in a useful and constructive vein. Such matters as vaporisation and evaporisation, inertia, the laws governing the flow of fuel through small orifices, the annulus, jets, and float chambers, are in turn considered, and very thoroughly expounded. Had it not been for exigencies of space, doubtless Mr. Brewer would have been able to go more au fond into such matters as petrol substitutes, but as it is the subject is touched on in a thoughtful and indicative manner.

One notes that the writer holds the opinion, consoling in view of what we had been led to believe, that, owing to the installation of numerous recovery plants in England, very large quantities of benzole should be available as motor fuel after the war. It is news to learn that as much as twelve million gallons of this spirit are produced annually in England.

Considerable pains have evidently been devoted to the chapter on thermal efficiency and exhaust products, and the deductions with regard to the bearing which this has on the correct ratio of air to fuel cannot but be of service to seekers after efficiency.

Illustrations are given of the author's specially designed carburetter, which has been planned with a view to attaining perfect atomisation. The principal features embodied in the design of this instrument are a variable progressive lift of the fuel needle in comparison with the lift of the air valve, and a jet orifice the coefficient of discharge of which is approximately constant under varying conditions. From the lay-out we should say that the

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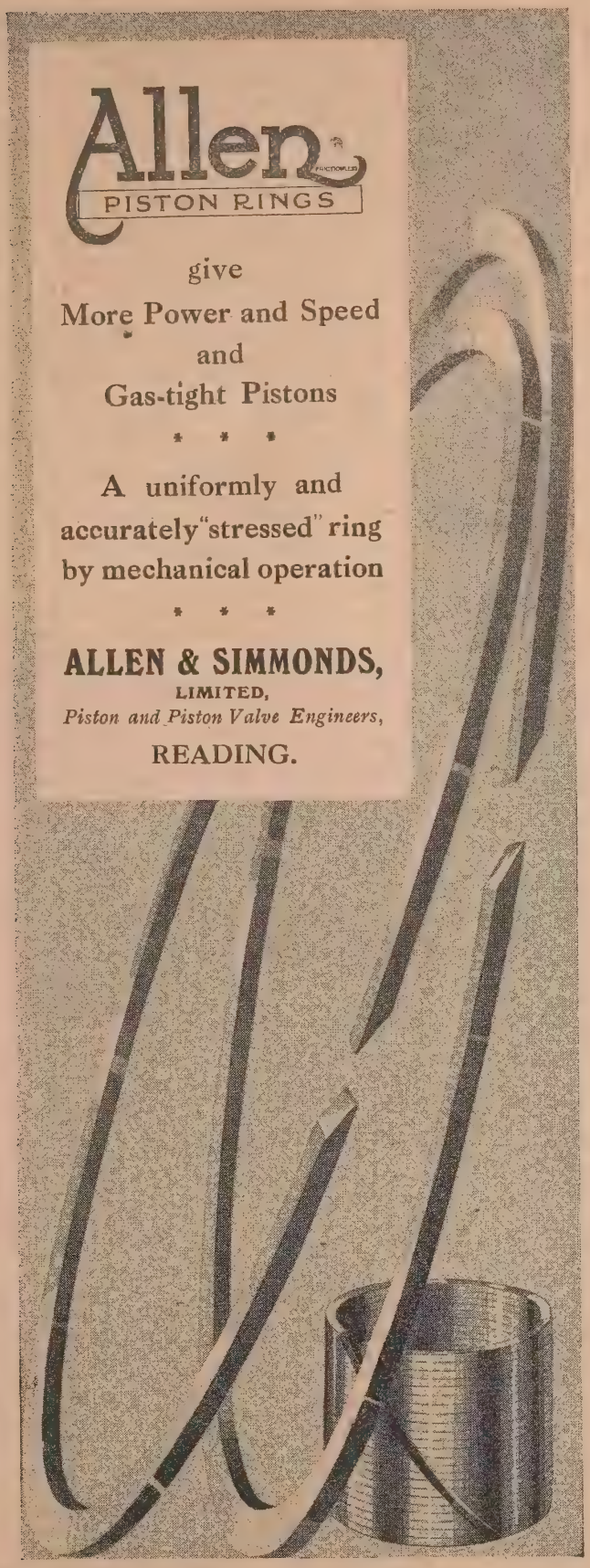
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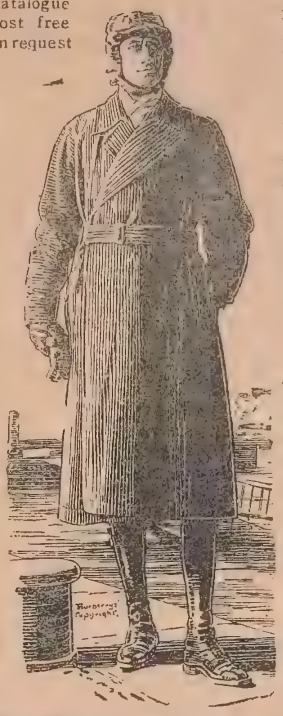
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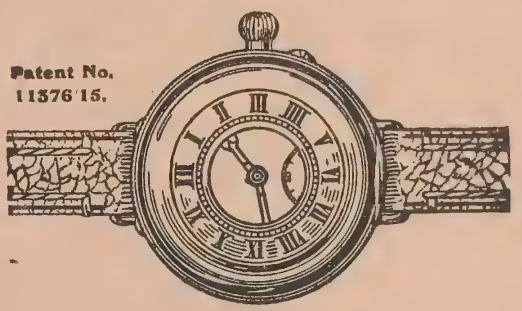
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instrument would be easy to manufacture, and its simplicity is a particularly commendable feature.

Three-phase carburettors of the Binks type are touched upon, and the Holley instrument, inseparable from the ubiquitous Ford, is described at length. Among the appendices I note some notes on the use of town gas which should be of use to lorry-owners at the present time.

For manufacturers and others who wish to go exhaustively into the elusive science of carburation, this volume should prove indispensable.—R. H. B.

WOMEN AND SOLDIERS

When Colette Willy was being sued by his wife in the French courts on the ground that he had no part in the many books on which they had supposedly collaborated, the wicked author of "Claudine à l'Ecole" said: "It is fortunate that we had no children, otherwise Madame would have claimed exclusive authorship of *them*!"

This refreshing story is brought to my mind by Mrs. Alec Tweedie's latest book: "Women and Soldiers" (The Bodley Head, 3s. 6d.). It is a solid pæan of praise for women, and is calculated to reduce any male reader to a befitting humility. Behind Mrs. Tweedie's pen is the driving force of a terrific and catholic enthusiasm. She vigorously spanks the Eternal Bad Boy that lurks in every man, and shows him how much better women could do it all. Reading, you will beseech her to be as merciful as she is strong, and you will probably capitulate before you reach page 71. I did. Besides, you know, womenfolk are so infernally plausible.

Ablaze with the desire to help, Mrs. Tweedie went to the late Lord Kitchener on October of 1914, and proposed to raise a woman's army. The strong man of Egypt said: "Women's work will not be wanted." And now she is—er, man enough not to say: "I told you so!"

There is something peculiarly fascinating about Mrs. Tweedie's writing. She is constructive, thoughtful, and furiously loyal—but she remains always breezy and feminine. She flatly proposes combatant corps of women, and just when you are wriggling uneasily at the mere thought of it, she flips off at a tangent and tells you this engaging tale:

"Two soldiers in the sloppy trenches in France were sitting some distance apart, but they could communicate by telephone. 'All right, Bill?' 'Yes, all right, old chap.'

"The barrage increases. 'All right there, Bill?' 'Yes. old chap.'

"The barrage increases again. Third time. 'All right, Bill, old chap?' 'D——n it all, why on earth do you take such an interest in me?' 'Well, we've got a "sweep" on at this end, and I've drawn you as first casualty.'"

Naturally Mrs. Tweedie is strong on eugenics, the vote, and after-war conditions for housewives. She has some horridly trenchant things to say about husbands. They have no illusions for her. After reading this book no one of them would dare again flourish the whip over his miserable thrall.

Seriously, though, the chapters that deal constructively with post-war conditions are excellent. During the war Mrs. Tweedie would like to abolish window-dressing in shops, and a man, she says, "should never go into a shop at any time." I am wholly at one with her when she suggests a woman public health minister. Also more Sunday concerts and amusements, the better care of mothers and children, though never a man of us will concede her those fighting soldier-women she presses for. I doubt, too, that she will get her sex to take kindly to the idea of the co-operative home, for all its promised economies and labour-saving. She is not the only one who is "house-proud!"

The author has been closely in touch with munition and aeroplane women workers since their introduction to industry, and she puts forward many practical suggestions for the betterment of their conditions, and on this count alone the book should be in the hands of all manufacturers who are large employers of women labour. They will find that she is not unmindful of their difficulties, but has a happy knack of suggesting a way out or over.

As one who has herself made considerable sacrifices, she is above all things sympathetic and understanding. For that, and her delightful and obvious energy, this member of the Superfluous Sex salutes her—R. H. B.

ABOVE THE FRENCH LINES.

Under the title, "Above the French Lines," the Princeton University Press, of Princeton, U.S.A., has published some letters written by the late Stuart Walcott, an American citizen who joined the French Air Service on July 4th, 1917, and disappeared in an air fight on December 8th, 1917, presumably being killed.

The letters are addressed to his father and various friends in the United States, most of them being written during his period of training. They make very interesting reading because they depict in a matter of fact, unvarnished, way the system of training which existed in the French Army during 1917. Some of the routine seems quaint when compared with that of the old Training Brigade, R.F.C. For instance, the writer recalls how his captain awarded him eight days cells for being in Paris for a day and a half without permission, but he goes on to say that the jail did not mean anything as it would not have to be served.

There are some interesting references in the book to the work of the famous Lafayette Squadron, S.P.A. 124 and to the work of the late Major Lufbery and the late William Thaw, who were at that time the most prominent of the French aces.

As all domestic references have been edited out of the letters one does not experience that unpleasant sense of prying into private business which mars the perusal of so many reprints in this country of dead soldiers' letters.

Stuart Walcott evidently possessed a deep-seated sense of humour, and for this, if for no other reason, one regrets that his fighting career was so short. Apparently he accounted for a German aeroplane in his first air fight and lost his life in his second.

"Above the French Lines" is handled in this country by Mr. Humphrey Milford, and copies can be obtained from The Aeroplane and General Publishing Co., Ltd., 61, Carey Street, W.C.2, price 4s. 9d. post free.

AN INTERESTING WAR RELIC.

The following is a translation of an article in a French paper dated 1900. This particular article was filed with several others of a similar nature, and was found in a French town by an officer of 5th Army Headquarters Staff, immediately after the town had been evacuated by the Germans. Though the idea is in itself impracticable, it does at any rate show the intelligent interest which was taken in aerial navigation by some people even 18 years ago.

THE JAPANESE MASTERS OF THE WORLD.

A Japanese paper announces that a terrible engine of destruction has lately been submitted to the Japanese Government, in the form of an immense dirigible balloon. Up to the present a model only has been constructed, but it is said that most gratifying results have been achieved.

This aerial monster measures 110 feet long by 40 feet broad, while the height from top to bottom is 20 feet. It is made of aluminium; five enormous balloonets supply lifting power; and there is a sail at the fore-end and a huge propeller in rear. The system of control is the same as on a sailing-boat fitted with an auxiliary engine.

This marvellous machine is furnished with all the latest improvements; cabins for the 125 men of the crew, smoke-room, library, look-out tower and so on. Electricity reigns supreme, driving the propeller engine and furnishing both light and heat. Naked lights are prohibited, save, of course, in the form of cigarettes or a pipe. There is even an electric kitchen.

A special apparatus produces hydrogen for the ballonets by the simple process of decomposition of water drawn from the clouds. The "observatory," or look-out, deserves special mention; it is, in a way, the brain of the ship. It is provided with extremely powerful glasses which are directed downwards towards the earth, and by a secret arrangement of these glasses the airship can be directed over any desired point.

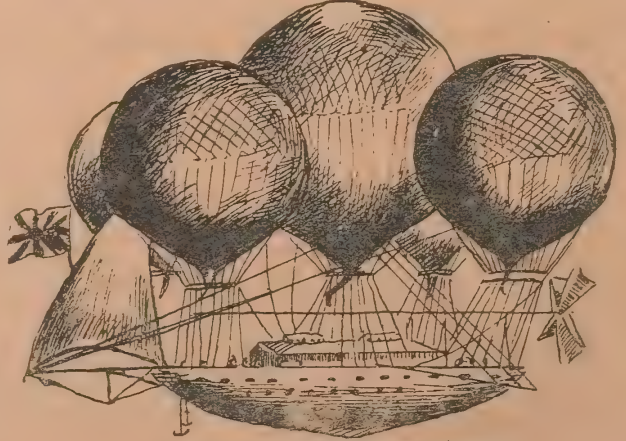
The airship commander, who, from his control-post, takes entire charge of the ship simply by pressing various electric buttons, also controls six torpedo-tubes and 12 bomb-catches.

Such an airship hovering over hostile warships will speedily bring about their destruction with a hail of torpedoes.

On land the ship is equally formidable. By dropping bombs on great masses of troops the enemy will quickly be annihilated.

Should the inventor's hopes be realised, this truly awful machine will go far towards giving the Japanese the absolute mastery of the world.

[On the whole, it seems that the writer of the original article, whether it really came from Japan or not, had a fairly good idea of the military uses of aircraft. He was, however, nearer 30 than 18 years in front of his time.—Ed.]



Le nouveau ballon de guerre

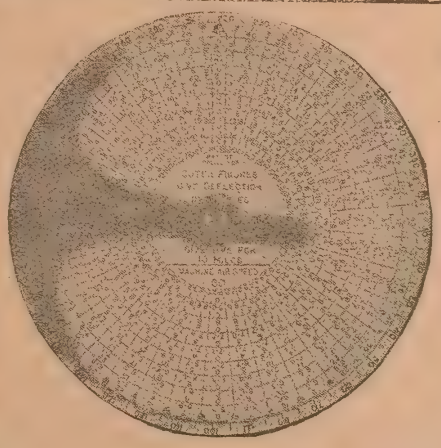


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THE SUBMARINE PATROLS.

Probably one of the most dangerous and most monotonous branches of the Royal Air Force work during hostilities was the sea patrol. The duty of the aviators engaged upon this section of war-flying was to patrol the sea area within 30 miles of the English coasts, which was considered the safety zone for shipping. And this work was carried out in face of many difficulties, only being entirely interrupted by dense fog or a full gale.

The R.A.F. anti-submarine patrol developed from the R.N.A.S. anti-submarine campaigns at Dunkirk and the Dardanelles. For inshore work from three to five miles the D.H.6 was utilised. It was altered from a two-seater school machine to a single-seater, for this purpose. Farther out went the seaplanes and the D.H.9, very often beyond the 30-mile line. Beyond this, again, went flying-boats and airships.

All aircraft engaged on these R.A.F. patrols were under the direction of the Senior Naval Officer of the Group to which the squadrons were attached. In this way the machines were used in conjunction with the surface craft and the hydrophone stations. There was, in fact, perfect collaboration between the R.A.F. and the Navy.

Types of Aeroplanes Employed.

The first type of machine to be used was the old float seaplane, built by the Short brothers, and the Sopwith "Baby," and the White seaplanes were also used towards the end of 1916. Depth charges and bombs were dropped from these machines, but the Naval demand for the former became so great that finally only bombs were used. Short seaplanes were in use from 1916 until the cessation of hostilities, not only round our coasts but also in the Mediterranean.

The flying boats made their first appearance on the East Coast in the early part of 1917, and were used for the same kind of work as seaplanes, but had the advantage of greater power and greater endurance in bad weather. The early type known as the H.12 had a rounded hull, but later, the F type was produced, fitted with two 350 h.p. Rolls-Royce engines, with a V-shaped hull. Plans were made for the flying-boats to be fitted with hydrophones, so that whilst on the surface the personnel could listen for submarines.

Land Machines on Sea Patrol.

Land machines were only brought generally into operation against the submarines in the early months of 1918, when the menace was exceedingly grave. Aerodromes were established all round the coasts, to which squadrons were sent. The types chiefly used were the D.H.6 and the D.H.9, although a few squadrons, mostly on the East Coast, used the Blackburn Kangaroo, the F.E.2b., and the D.H.4.

In 1918, the enemy initiated an air offensive against our anti-submarine patrols. A very fast monoplane—Brandenburg—heavily armed, was used, which necessitated the escorting of our flying-boats and other aircraft by purely fighting machines, such as the Sopwith Camel.

The following figures represent the work of the R.A.F. anti-submarine patrols during the period from April 1st to Oct. 31st of this year:—

Total number of hours flown	39,102
Hostile submarines sighted	216
,, ,, attacked	189
,, aircraft attacked	351
,, ,, destroyed	184
,, ,, damaged	151
,, mines spotted	69
,, ,, destroyed by aircraft	32
Total number of bombs dropped (This is equal to 661½ tons).	15,313
Total convoy flights	3,441
Total photographs taken	3,449

THE FRENCH NAVY'S AIR SERVICE.

A "Times" correspondent, writing from a Mediterranean port some time ago, gave the following interesting account of the work of the French Naval Aviation Service:—

The aviation branch of the French Navy has much more to its credit than is generally known, and much that may not be disclosed until after the war. There is, however, one thrilling episode which I may describe.

Two seaplanes started on searching duty from their base, operating towards the Algerian coast. At 2.30 p.m. the motor of one broke down, compelling the seaplane group leader, Lt. Richer, to descend about 20 miles from the coast. When the other machine arrived to render assistance her pilot was ordered to search for a tug. Darkness fell without succour arriving, and Lt. Richer and his companion (Petty Officer Guerin) sent up signals of distress, but without result. Guerin made a flare by soaking his gloves in petrol. The sea became rough, and the sea anchor was "streamed." The cable of the anchor, however, broke, and means for replacing the anchor had to be devised. By using the tool-bag and seat-cushions another anchor was fixed up.

About midday the following day (Jan. 14th) they were 25 miles from land. The wind shifted and the plane floated farther away. The stock of food and water was almost exhausted. They drifted during the whole day and night of the 14th, and on the 15th, when some kilometres from an island, they again turned their attention to the motor, and presently it started working again in a halting fashion. Slowly they started to "taxi" towards the Island of Galite, off the coast of Tunisia, about 40 miles away, and as the stabiliser was broken, Lt. Richer had to balance the machine by crawling from wing to wing. They had reached within a few miles of Galite, when the motor broke down definitely. Meantime, however, they had been observed from the shore, and a patrol boat picked them up. They had been afloat for 80 hours, and had drifted 90 miles.

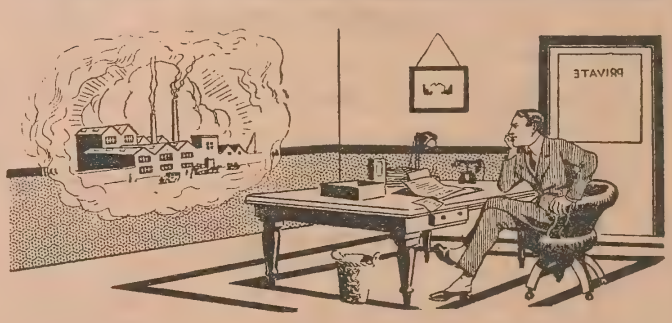
The story of U 39 is a tribute to French endurance and bravery. During the night of May 17th-18th one of the Algerian aviation stations received a signal from a convoy that they were being attacked by a submarine. At daybreak two planes went out. When the planes reached the convoy, they saw the submarine half-submerged. She promptly "went under" at the approach of the planes. Petrol was giving out, and the planes made for an adjacent aviation station. The commander of this station sent up two other planes. The weather was still bad, with heavy squalls. They battled on, and reached the convoy just as one of the ships turned sharply as if avoiding torpedo attack. The planes escorted the convoy for half an hour, when the submarine broke surface five miles away heading towards the convoy.

The planes were masked by clouds, and the wind prevented the submarine's crew from hearing the oncoming machines. One plane, commanded by Lt. Leray, and accompanied by Wt. Officer Baconin, rushed to the attack, and dropped bombs. Presently the bow of the submarine shot out of the water, and a black patch of oil with bubbles appeared on the surface. Believing the enemy was mortally hit, Lt. Leray planed down to identify some *débris*. Just then the submarine got on an even keel, and the crew rushed on deck and opened fire. The petrol from both planes was running out, and they were compelled to make for the coast. More planes were sent out from the base. The submarine was still on the surface. She opened fire on the planes and zig-zagged to avoid the bombs that were being dropped. She got away, but was so badly damaged that she had to seek refuge in Cartagena, where she is interned.

AMERICAN AIR SERVICE BADGES.

The following paragraphs give the official descriptions of the badges or insignia worn by officers and men of the American Air Service (composed partly of the old U.S. Signal Corps (Regular Army), and partly of the new National Army, Air Service).

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schools, and schools for aerial observers will wear the uniform of enlisted men of the Signal Corps, with the addition of a band of white pique, 1½ in. wide, around the cap and Service hat.

MILITARY AVIATOR.—The insignia, to be embroidered in silver on blue background, will be two wings with the shield between, and a five-pointed star above the shield. The wings to be three inches from tip to tip, each wing to be 1⅛ in. long and 9/16 in. wide at the centre ends; the shield to be 9/16 in. high and ⅝ in. wide, with the letters "U.S." in gold thread ¼ in. high in the centre, below the horizontal cross lines; the star to be 9/16 in. in diameter. To be worn on the left breast.

JUNIOR MILITARY AVIATOR AND RESERVE MILITARY AVIATOR.—The same insignia described for the military aviator except that the star above the shield will be omitted, the insignia consisting of a double wing shield. To be worn on the left breast.

MECHANIC.—A navy blue cap let in at the sleeve head seam, and extending down the sleeve 5½ ins. from point of shoulder, embroidered in white; the propeller to be 2 ins. in diameter, two of the blades horizontal, and the other two vertical; with a white embroidered circle added, inside of circle to 1½ in. from centre of the propeller, outside of circle to be 1⅝ in. from centre of propeller. To be worn on the right sleeve just below the shoulder.

ENLISTED AVIATOR.—On the same blue background shall be embroidered in white the insignia as hereinafter described. A pair of wings with a 5 ins. spread with crossed propellers between them, each wing to be 1⅞ in. long and ⅞ in. high at the inner edge. Propellers to be 1 in. across. To be worn on the right sleeve just below the shoulder.

Observers.—The insignia to be embroidered in white on blue background will be a single wing of the same shape and dimensions as prescribed for the military aviator, to the left of a letter "O," of Gothic design, ⅝in. high.

The above insignia are worn on the left breast, together with the collar ornament of the crossed flags and torch by members of the Aviation Section of the Signal Corps, and with the two winged propeller by members of the Air Service, National Army.

ANTI-AIRCRAFT UNITS.—The insignia prescribed for members of anti-aircraft battalions or squadrons is the same as that for machine-gun battalions or squadrons, and consists of the infantry or cavalry device, with the number of the battalion or squadron in the upper angle, ¼in. high. The infantry device is composed of two crossed rifles in gold or gilt metal, one inch in height; the number of the regiment ⅜ in. high in the upper angle. The cavalry device is composed of two crossed sabres in gold or gilt metal, one inch in height; the number of the regiment ⅜ in. high in the upper angle. To be worn on the collar.

ANTI-AIRCRAFT ARTILLERY.—Members of the Anti-Aircraft Artillery wear the Coast Artillery device, with letters "AA" in the upper angle. The Coast Artillery device consists of two crossed cannon, with an oval-shaped raised centre, both of gold or gilt metal; the centre of the oval is of red enamel, with projectile, point up, in gold or gilt metal; the device is one inch high. All three last-named insignia are worn on the collar.

MILITARY AERONAUT.—The insignia to be embroidered in white on blue background will be two wings, with a balloon between, and a five-pointed star above the balloon. The wings and star to be of the same shape and dimensions as prescribed for the military aviator. The bag of the balloon to be 9-16 in. in diameter, with the letters "U.S." in gold thread, ¼ in. high in the centre. The basket to be 1-16 in. high, ⅛ in. wide, suspended from the bag by threads converging to a point between the basket and the bag. The entire height of the balloon to be 13-16 in

JUNIOR MILITARY AERONAUT AND RESERVE MILITARY AERONAUT.—Same as military aeronaut, except that the star above the balloon will be omitted, the insignia consisting of a double-wing balloon.

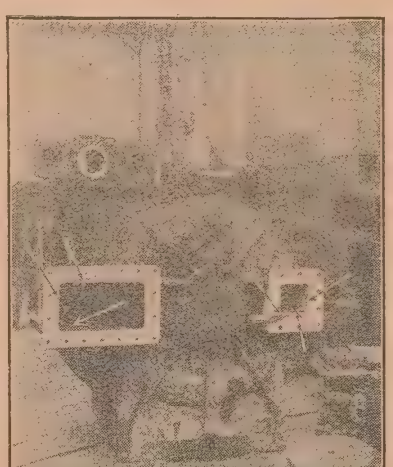
AN AIR SERVICE BILL IN THE U.S.A.

According to "Aviation," New York, the Bill introduced by Senator Harry S. New, of Indiana, to create an executive department in the Government, to be known as the Department of Aeronautics, has been reported on favourably to the Senate by the Committee on Military Affairs.

The approval of this measure follows closely on the refusal of Acting Secretary of War Crowell to give the Bill the endorsement of the War Department, because in his view "the organisation of a Department of Aeronautics, separate and distinct from the War Department, and containing military activities not under the control of the Secretary of War, is believed to be essentially wrong in principle."

But, notwithstanding this, the Senate Committee on Military Affairs, by a vote of 11 to 2, returned a favourable report, eliminating, however, that clause of the original measure which would give the head of the proposed department a seat in the President's Cabinet. A provision was inserted giving the President authority to transfer to the Department of Aeronautics powers now vested in other departments pertaining to the Air Service, and "such personnel necessary for its operations."

As finally agreed upon, the department is to be created for the period of the war, and for one year thereafter. The head of the department, to be appointed by the President, will receive a salary of $12,000 a year, and will have "direct and complete control of all matters pertaining to the designing, purchase, manufacture, production and operation of aircraft," not only for the Army, but also the Navy and Marine Corps.



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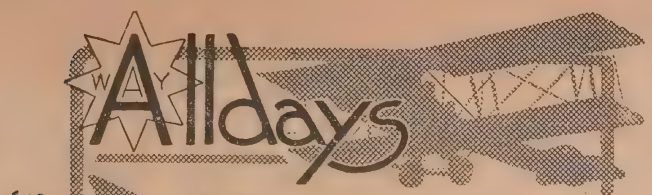
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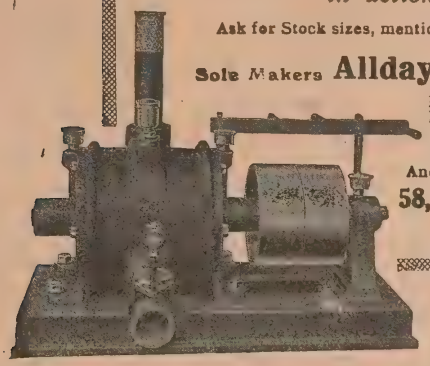
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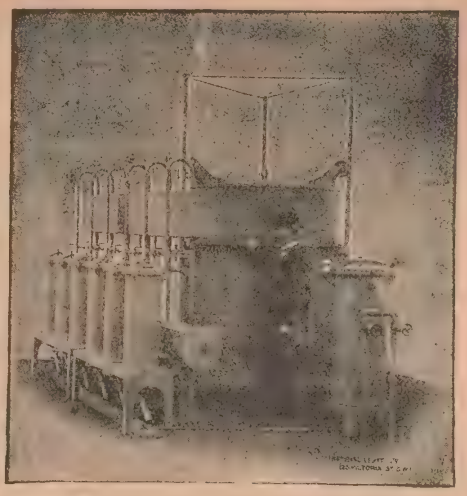
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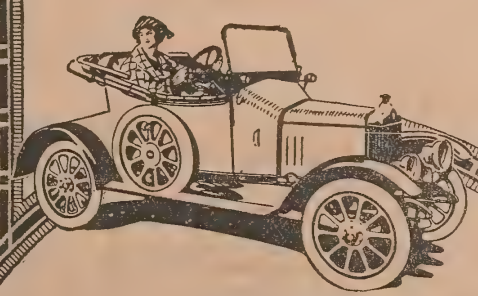
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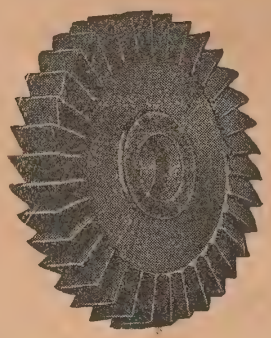
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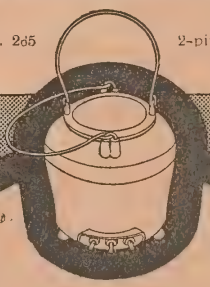
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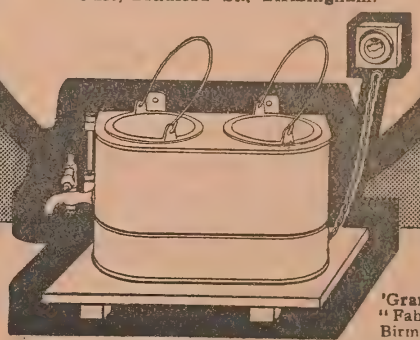
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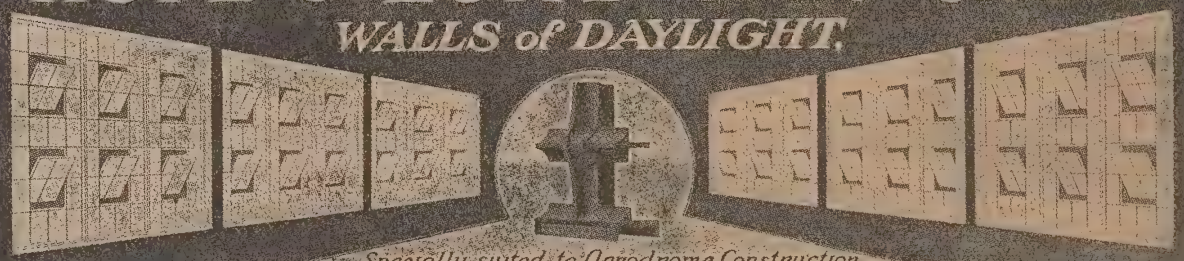
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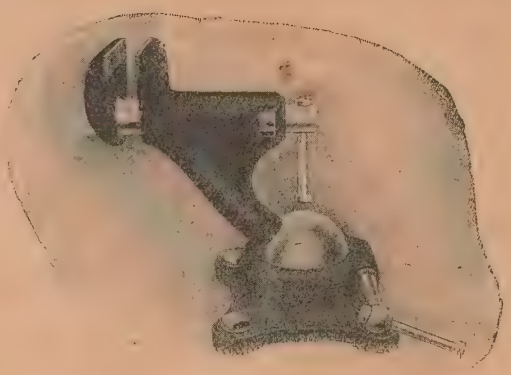
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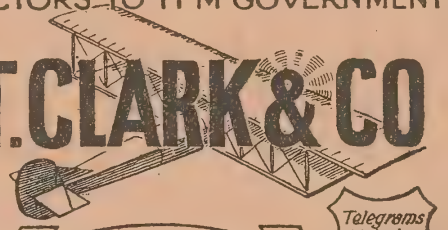
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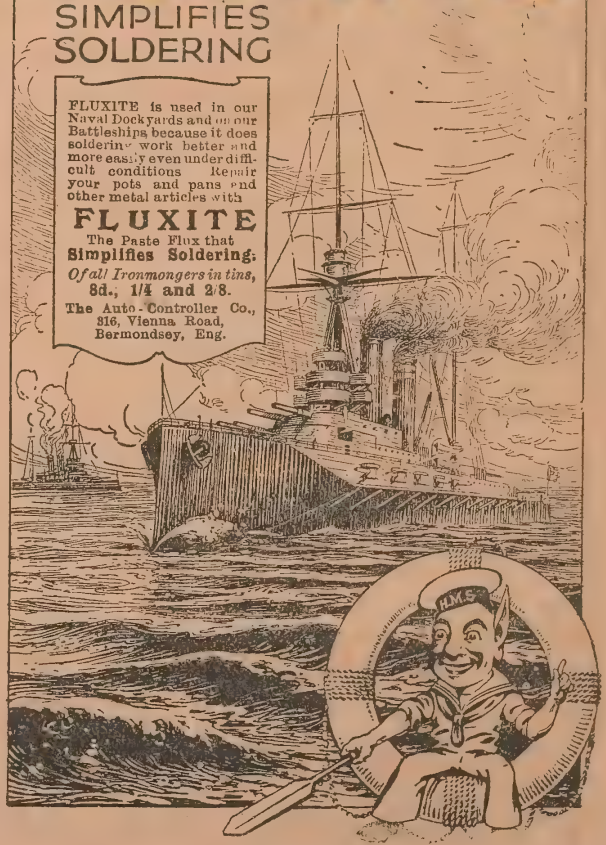
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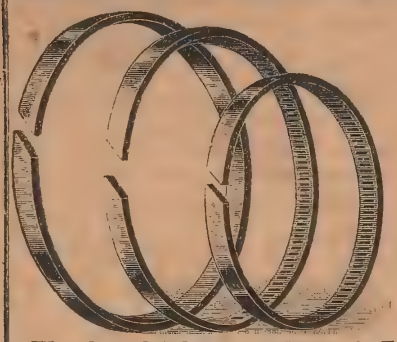
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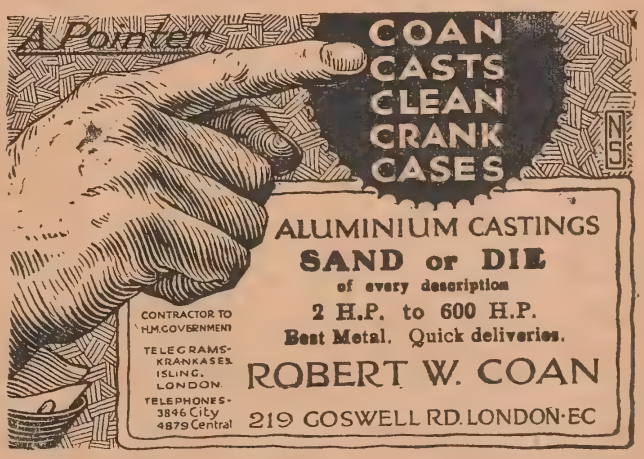
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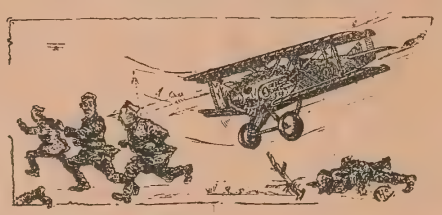
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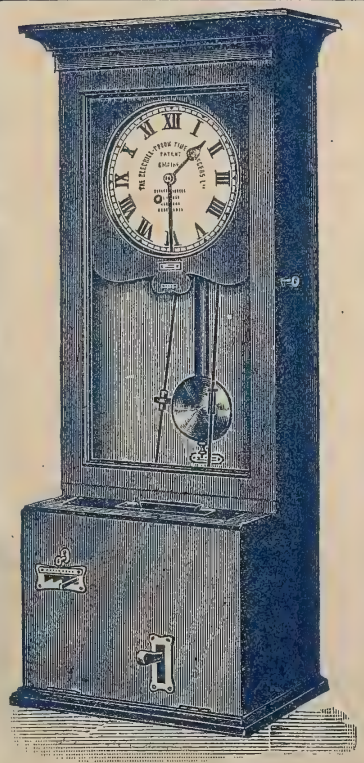
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Edited by C. Grey

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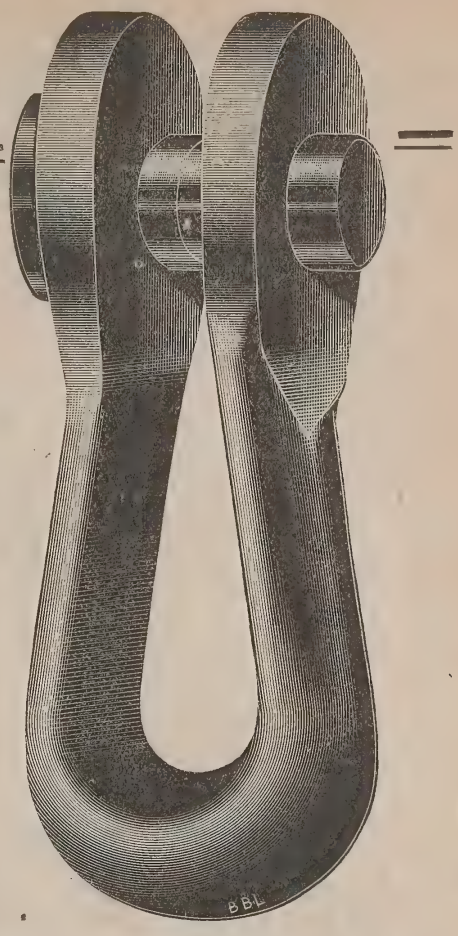
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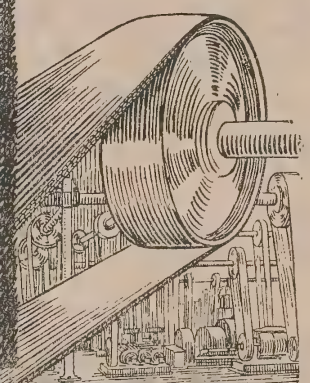
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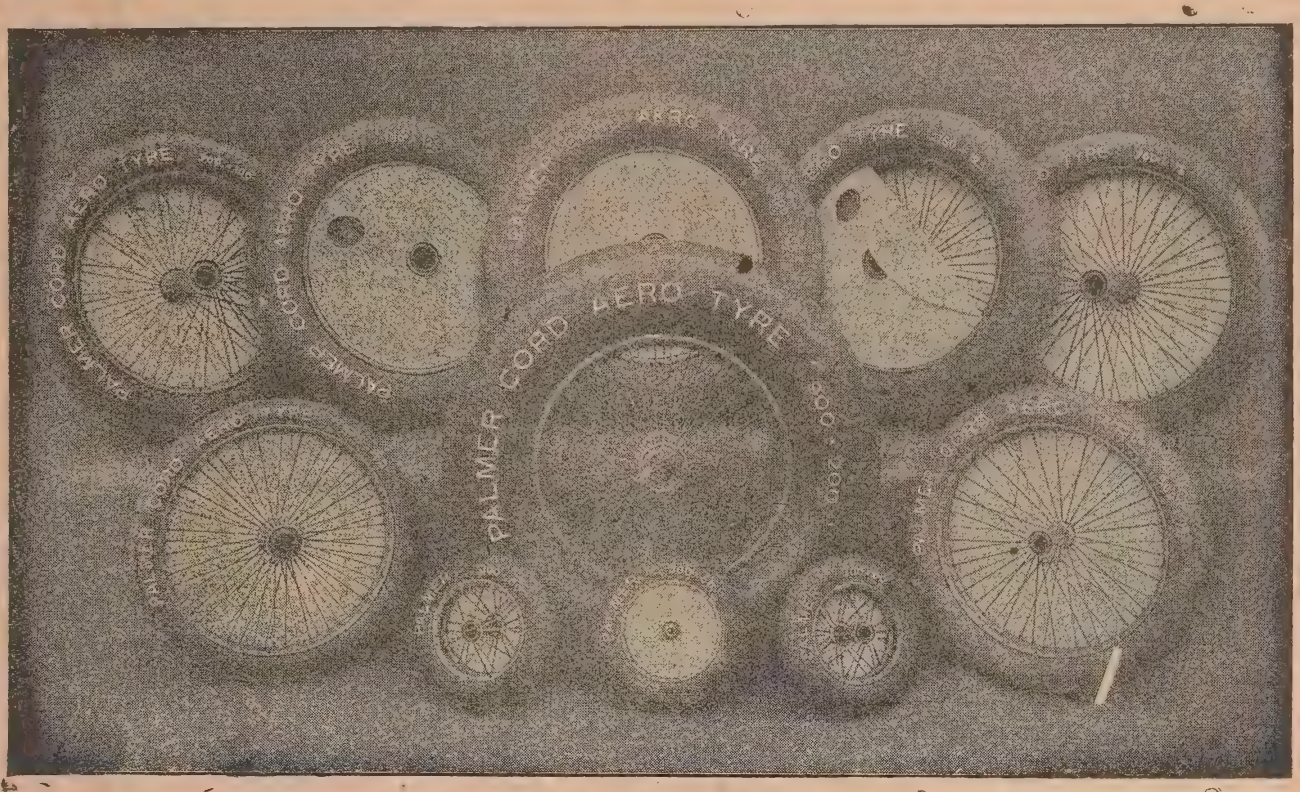
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,,	34	150.	31.75	104 46	,,	96	178.	55.	132/46	,,	†205	185.	60.32	Central
,,	111	150.	38.09	104 46	,,	99	178.	38.89	132/46	1000×150	97	250.	65.4	Central
650×65	78	178.	44.45	132 46	,,	112	150.	40.	Central	,,	102	185.	55.	125/60
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600×75	21	160.	28.	Central	,,	92	185.	55.	135/50	,,	120	185,	66.67	125 60
,,	34	150.	31.75	104 46	,,	95	185.	55.	Central	,,	202	185.	60.32	Central
,,	111	150.	38.09	104 46	,,	96	178.	55.	132/46	,,	208	185.	60.32	125 60
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ON THE CIVIL AERIAL TRANSPORT COMMITTEE.

II.

Having dealt with the constitution of the Civil Aerial Transport Committee and its Interim Report, one can now turn to the Final Report, which, with its Appendices and Appendices to its Appendices, covers 76 out of 83 pages. This Final Report is divided into an Introduction, which explains the Committee's reason for existing and need not be reproduced; five Chapters, each dealing with the work of one of the five Special Committees mentioned last week; some Concluding Observations, with which one will deal in due course; and a Minority Report by one member, Mr. Frank Pick, with which one will also deal in due course.

It is proposed to take the Chapters in their order and comment upon them. Chapter I deals actually with the second part of the Report of the Special Legal Committee, the first part—that concerned with International Law having been deal with in the Interim Report. The Report reads as follows :—

CHAPTER I.

Municipal Control and Legislation.

1. The necessity for some legislation as to aerial transport is sufficiently indicated in the report of Special Committee No. 1.* We adopt the view of that Special Committee in approving the general lines upon which the Aerial Navigation Bill (see Appendix B in their Report) is drawn. Before proceeding to a detailed consideration of its clauses we offer the following general observations.

2. We think that the claim to full and absolute sovereignty should be emphasised in the preamble to the Bill for the reasons already suggested in our Interim Report.

3. The Bill itself is drawn in such a manner as to leave to Government Departments power to issue regulations and to clothe them with a considerable discretion as to the scope of these regulations. The Bill as drawn has taken the Merchant Shipping Acts as the model for many of its clauses—e.g., as to registration, certificates of airworthiness, and collision regulations. For this reason it is proposed in the Bill that the Home Office should be responsible for general regulations as to flying and for matters in which the police are concerned, and the Board of Trade for administrative regulations of the kind indicated above.

4. The Special Committee have expressed a definite opinion that all the powers and duties of regulating aerial transport should be assigned to the Air Ministry. This proposal offers certain advantages in grouping in one Department officials and experts responsible for the issue and administration of regulations, which in the present case must to a great extent be governed by naval and military considerations. As an illustration, it is only necessary to refer to the close connection between prescribed landing places for foreign aircraft and prohibited areas. As against the proposal the analogy of railways and shipping seems logically to point to the desirability of assigning aerial transport to the Government Department primarily concerned with trade and commerce—i.e., to the Board of Trade. If the former view, which we consider the preferable one, be adopted, some legislation in extension of the Air Force (Constitution) Act, 1917, would seem to be necessary to enable the Air Ministry to create the organisation required to deal with civil as distinct from military flying.

5. The clauses of the Aerial Navigation Bill itself have been closely examined by Special Committee No. 1. We do not propose to deal with them seriatim, and think it better to state that, generally speaking, subject to two modifications noted below, we approve of the detailed conclusions arrived at by the Special Committee.

6. Of the general regulations contemplated in Clause 1, those which will prescribe prohibited zones and landing areas for foreign aircraft are probably the most important. We have already referred (in our Interim Report, paragraphs 5 and 9) to the desirability of liberal treatment in the admission of foreign aircraft to this country.

7. The Bill adopts as the criterion of British nationality in the case of aircraft the nationality of the owner. (See Clause 2.) Probably the most difficult problems as to nationality will arise in relation to ownership by companies, and we desire to draw particular attention to the recommendations of Special Committee No. 1 as to the conditions on which aircraft owned by companies should be deemed to be British aircraft. The provisions as to registration do not call for comment.

8. We note with approval the recommendation of Special Committee No 1 as to limiting the necessity for certificates of airworthiness (see Clause 4 of the Bill). The clause as originally drawn would involve the possibility of individual aircraft being subjected to stringent tests and examinations, which in our view would be unnecessary, and which, to be of any use, would require to be repeated at very frequent intervals. The question is one of considerable importance, since the recognition of foreign certificates in the case of international flying is a matter which must be dealt with in any International Convention.

9. As to certificates of competency for navigators (see Clause 5), we find ourselves not in entire agreement with Special Committee No. 1, who in their report approved Clause 5 of the Bill as originally drawn. We think that, while it should be obligatory on all navigators in charge of aircraft carrying goods or passengers to possess certificates of competency, and while the appropriate Government Department should have power to require certification of navigators in all cases, it should be left to such Department to decide whether or not certification of navigators of, e.g., private aircraft should be enforced by regulation. It seems to us that the safety of the public will probably be sufficiently ensured by the interest of the private navigator in acquiring sufficient skill to ensure his own safety. Since certificates of competency will be required on all occasions when aircraft of any kind are used in flying over foreign territory, the number of private navigators not taking out certificates will probably be small, in the event of no regulations being issued applicable to them. The absence of obligatory certificates, in the first instance, in the case of the private navigator, seems to us to be reasonable in the interests of the early development of civil flying.

10. The collision and signals of distress regulations, to the provision of which Clauses 6 and 9 of the Bill are directed, have already been referred to in paragraph 10 of our Interim Report. We have approved the view there expressed that the collision rules of the Royal Aero Club should be taken as a basis for the collision regulations. Signals of distress regulations are at present the subject of expert inquiry. In view of the fact that regulations of both these kinds must be discussed primarily from the international point of view, we do not think it advisable to offer recommendations of a more detailed nature than those contained in Appendix A to the Report of Special Committee No. 1.

11. The recomendations of Special Committee No. 1 as to regulations relating to identification and aircraft papers (see Clauses 7 and 8 of the Bill) and as to Clauses 10 and 11 of the Bill do not appear to call for any comment.

11. The recommendations of Special Committee No. 1 as to ing the general rights of landowners in the air space over their land. This right has generally been recognised in English law to extend usque ad coelum, and, although some authorities have held that the right only extends to a height sufficient for the reasonable enjoyment of the land, any application of the usque ad coelum doctrine in its entirety would be fatal to the development of aeronautics. The clause as originally drafted in the Bill relieved the owner of aircraft from liability for trespass in respect of his flight over land in the British Islands, but preserved the common law rights and remedies of persons in respect of

* See Appendix I.

injury to property or person caused by the aircraft or by any person carried therein. We agree with Special Committee No. 1 that the clause does not proceed far enough in determining the respective rights and liabilities of the owner of aircraft and the landowner, and we adopt the suggestions of the Special Committee to extend the provisions of the clause in the manner indicated in their report. These suggestions may be looked at from two points of view, viz., the remedies of persons on land for trespass or material damage to their property and their remedies for nuisance.

Admittedly persons on land are practically powerless to ensure their own safety by precautionary measures against damage caused by the fall of aircraft or of objects carried therein. It is a matter of some doubt whether under existing principles of law persons suffering such damage would be called on to prove an affirmative case of negligence or intentional trespass. It is possible that the Courts might hold aircraft to be within the class of those things which the owner keeps or uses at his peril. We think it preferable that the principles applicable should be defined by legislation rather than that they should be left for solution by a series of judicial decisions; we think, too, that as far as damage done by aircraft is concerned the deprivation of the landowner of what is almost certainly an existing right of property should be compensated by what will be in effect an insurance of himself and his property against such damage. Nor do we think that in practice the expense of insuring himself against third party risks will prove very burdensome to the owner of aircraft.

As affecting the question of nuisance or trespass to the property of the landowner in the air space above his land, we have given careful consideration to the possibility of defining some altitude, flying below which would involve a civil liability on the owner of aircraft. We have come to the conclusion that to attempt to prescribe any such altitude is impracticable, and that it will be sufficient to protect the landowner by giving him a specific right of action for damages for actual nuisance caused in breach of flying regulations in the manner suggested by Special Committee No. 1. Since nuisances by aircraft are most likely to arise in connection with the ascent from and landing at aerodromes, we recommend that special attention should be paid to the flying regulations applicable to such ascent and landing.

13. We do not desire to add anything to the recommendations of Special Committee No. 1 as to Clauses 13-22 inclusive and Clause 24 of the Bill.

14. With regard to Clause 23, which defines, as between the United Kingdom and the remainder of the Empire, the extent to which the provisions of the Bill are to apply, we desire to emphasise alike the importance of uniform legislation, so far as possible, throughout the Empire on aeronautical matters, and of avoiding any appearance of dictating to the Dominions or of infringing in any way their local autonomy. In our view, the clause rightly applies universally throughout the Empire the provisions of an international character—namely, those relating to registration, collisions, aircraft papers, and signals of distress—and we hope that H.M. Government will take steps to circulate the Bill, in the form in which they may themselves adopt it, to the various Dominion and Colonial Governments, so that the latter may have an opportunity of considering whether they will adopt it, with or without modifications to suit local conditions, for their own territories, and, if so, of expressing their views as to the means to be employed for applying it to those territories.

15. In the remaining paragraphs of their Report, Special Committee No. 1 have dealt with various questions relating to aerodromes. We approve their recommendations, and we would emphasise the suggestion made in paragraph 11 of Part II of their Report that the clauses necessary to give effect thereto should be added to the Bill.

APPENDIX I.

Report of Special Committee No. 1.

Terms of Reference:—

To advise as to policy and necessary legislation, with special reference to—

(1) The attitude to be adopted by the State with regard to national sovereignty in the air and international questions connected with aerial transport.

(2) The question of State ownership (if any) or of necessary State control and regulations as to Customs, Quarantine, and Aliens.

(3) Necessary amendments of the common and statute law as to the air space covering private property and as to compulsory purchase of land for aerodromes and landing grounds.

(4) The principles of liability for damage caused by or to aircraft.

As stated last week, it is proposed to deal with the draft Aerial Navigation Bill of 1911 in some detail at a later date; meantime one can gain a general idea of its contents from the Committee's comments thereon. The Bill, one may remark, was drafted, but never brought before Parliament, and one assumes that in due course and in a modified form it will be introduced ere long by the Air Ministry so as to confer on that Department the powers required for the proper regulation of our internal aerial traffic.

It is necessary, however, for the proper understanding of Chapter I to have before one the second part of the Report of Special Committee No. 1.

PART II.

Government Control and Legislation.

1. The control of aerial navigation after the war in the United Kingdom and the Empire is a matter which will necessitate some legislation. Before the war the control of aerial navigation in the United Kingdom was dealt with by two Acts of Parliament, the Aerial Navigation Act, 1911 (1 and 2 Geo. 5, C.4) and the Aerial Navigation Act, 1913 (2 and 3 Geo. 5, C.22). Under the first of these two Acts power was conferred upon the Home Secretary to prohibit the navigation of aircraft over prescribed areas, and an Order by the Home Secretary under that Act, dated Sept. 22nd, 1913 (S.R. and O., 1913, No. 1090), prohibited the navigation of aeroplanes over so much of the County of London as lay within a circle, the centre of which was Charing Cross and radius of which was four miles in length. The Act of 1913 extended the power of the Home Secretary to regulate aircraft and provided for compulsory landing of aircraft coming from any place outside the United Kingdom. Orders and Regulations made by the Home Secretary dated March 1st, 1913 (S.R. and O., 1913, Nos. 228 and 243) made provision for (a) prohibited areas; (b) portions of the coast line prohibited to aircraft from abroad; (c) landing areas for aircraft from abroad; and (d) conditions imposed on aircraft from abroad. On Aug. 2nd, 1914 (S.R. and O., 1914, No. 1117), an Order was made by the Home Secretary prohibiting navigation of all, except Naval and Military, aircraft over the whole area of the United Kingdom. These Acts, Orders, and Regulations represent the only legislative enactments made before the war. Some similar legislation had been passed in other portions of the British Empire.

2. In anticipation of the early development of aeronautics, the Home Office, in 1911, prepared an Aerial Navigation Bill,* which represents what in that year would have been the basis of a complete code of law controlling aerial navigation. This Bill, a print of which is appended to this report as Appendix B, has been of the greatest assistance to the Special Committee in this branch of their inquiry, and though later aeronautical developments render modification of some of its provisions necessary, the Special Committee approve of the general lines on which the Bill is drawn.

3. It has appeared to the Committee convenient to deal in the body of this report with the general principles on which Government control and legislation should be based and to relegate to a third Appendix (Appendix C) their recommendations as to matters of detail and their suggestions as to such drafting modifications of the Bill as they think may be of assistance to the Parliamentary draftsman.

4. In the Preamble to the Bill will be found an assertion of sovereignty and rightful jurisdiction of the Crown over the air superincumbent on all parts of H.M. Dominions and the territorial waters adjacent thereto. With regard to this assertion, the Special Committee would refer to Part I of their report, paragraphs 2—6 inclusive, in which the international aspects of the assertion are dealt with.

* * * * * * *

5. It will be observed that the Bill contemplates the following Government Departments as taking part in control and regulation:—the Home Office, the Board of Trade, Customs, and Post Office. Of these the two last named are only concerned with particular provisions relating to Customs and mails. The Bill proposes that the Home Office should act in imposing and enforcing general regulations, while to the Board of Trade are assigned duties as to registration, certificates of different kinds, and regulations regarding collisions, salvage, and matters *ejusdem generis*. In so far as the powers of the Board of Trade are concerned the Bill is drawn largely upon the analogy of the Merchant Shipping Acts. The creation of a new Air Ministry will afford a convenient opportunity for conferring on that Ministry the powers of the Home Office and Board of Trade to regulate aerial navigation. The advantages of assigning to

*This Bill was in a preliminary stage of preparation and had not been adopted by the Home Office or the Government.

a single Department of State the regulation of all matters relating to civil aerial transport are manifest, and the relevant clauses of the Bill will require amendment accordingly.

6. The Committee propose next to deal with the questions of principle arising on the different clauses of the Bill.

Clause 1.

In connection with sub-section (1) (b) of this Clause and any regulations which may be made thereunder, attention is called to the Committee's recomendations in Part I of this report relating to Article 19 of the Draft International Convention, and particularly to the additional rule which the Committee suggest should be inserted in that Article. It appears to the Committee that some caution should be observed in the prescription of areas for the landing of foreign aircraft, so that, while every reasonable encouragement should be given to the visits of foreign aircraft, reciprocal facilities should be secured for our own aircraft landing abroad. It has to be borne in mind that as the geographical area of the British Isles is comparatively small, it is to the advantage of this country, from the purely commercial point of view to secure free access for her aircraft to foreign territory. From this point of view, therefore, a liberal policy in the matter of international aerial navigation for civil purposes is indicated. Certain verbal amendments to this Clause are suggested in Appendix C.

Clause 2.

The Committee appreciate the fact that the broad questions of nationality and naturalisation are being dealt with independently of aerial navigation. As a matter of principle arising on (d) they think that in the case of companies the true criterion should be that the effective control of the company for all purposes should be vested in British subjects. They refer to their recommendation on Article 3 of the Draft Convention as equally applicable to the sub-section in question.

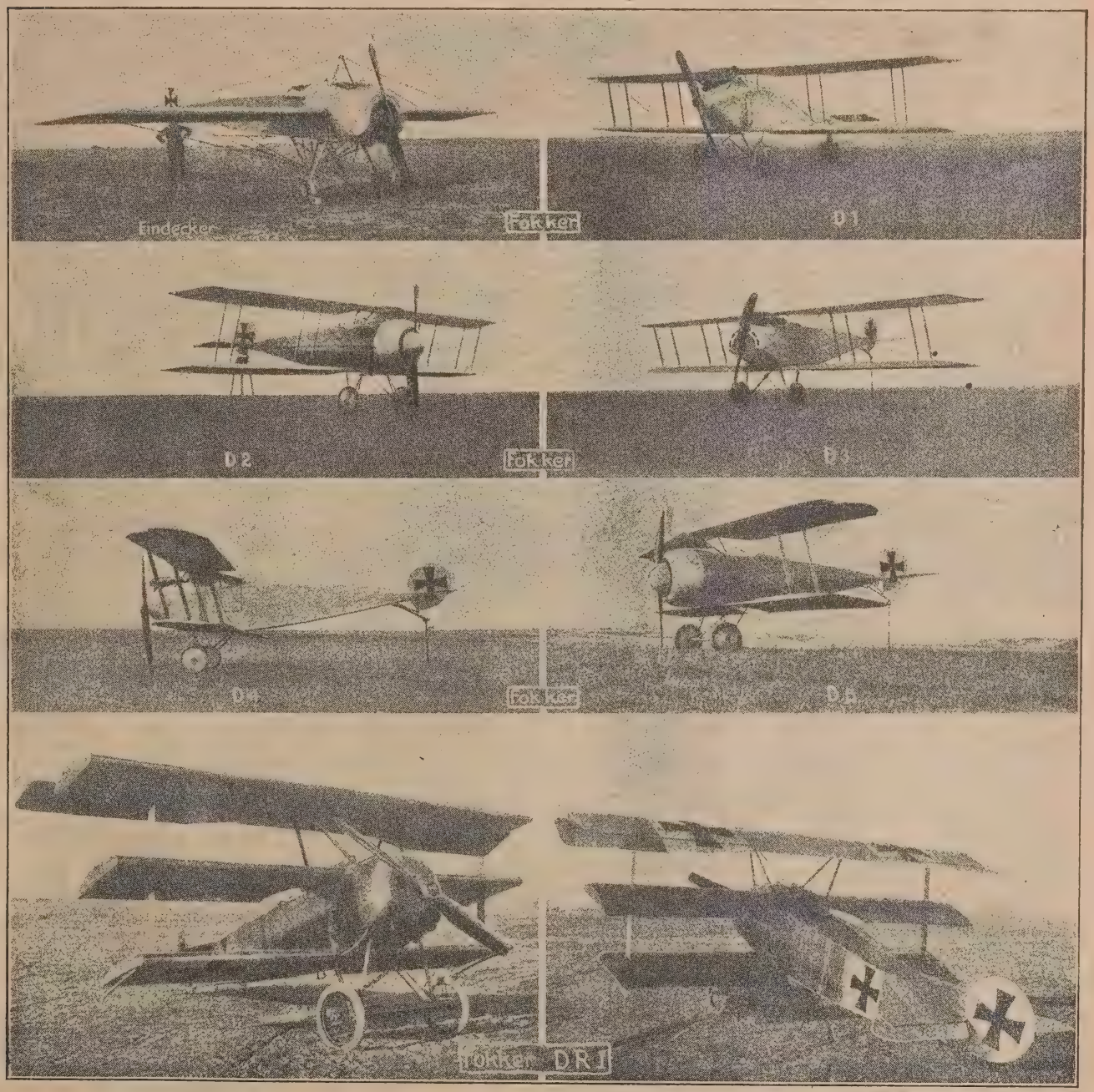
With regard to the ownership of aircraft by subjects of British Protectorates, the Committee adopt the suggestion of the legal advisers of the Colonial Office that a clause should be added to the Bill empowering His Majesty, by Order in Council, under the Foreign Jurisdiction Act to apply the provisions of the Bill, with any necessary adaptations, to Protectorates and Protected States. The India Office should be consulted as to whether the proposed new clause would be applicable to India as it stands or whether it would require modification to apply it to the Native States.

Clause 3.

The Committee think that, following the precedent of the Merchant Shipping Act, 1894, the Bill should expressly provide for local registration in the various British Possessions.

Clause 4.

The Committee feel that the question of certificates of airworthiness is one which requires close attention. Regulations as to certificates of navigability and reciprocal recognition by the contracting Powers of such certificates were contemplated



The Pedigree of the Fokker Firm.

in the Draft Convention of 1910. It appears to the Committee that for the purpose of ensuring safety for the ordinary population it is better to provide for the competency of pilots by stringent regulations rather than to run the risk of hampering the development of civil aeronautics by imposing on all aircraft onerous conditions as to tests and examination, which might possibly be imposed within the terms of the Clause. At the same time the Committee think it reasonable to require that passenger machines plying for hire must be of types the airworthiness of which has been officially certified. The Committee therefore recommend that the provisions of Clause 4 should only be made applicable to types of passenger machines plying for hire, and that this should be made clear in the Clause itself, and not left to exemption under the regulations. Even in the case of types of aircraft requiring certificates of airworthiness the Committee feel that the regulations should be so drawn as not to hinder the development of design in the early days of civil aerial transport. The Committee think that these conclusions should be borne in mind in the settlement of any future Convention.

Clause 5.

The Committee approve this Clause.

Clause 6.

The Committee, while recognising the necessity for collision regulations, are not in a position to make recommendations as to the details of such regulations, which fall within the province of Special Committee No. 2. In so far as the Clause proposes alternative sub-sections, the Committee approve the second alternative sub-section (3). As to the alternative sub-sections numbered (4) the Committee are of opinion that it is advisable to retain the principles governing both the alternatives. As to sub-section (5), subject to a drafting amendment noted in Appendix C, the Committee approve this provision, omitting therefrom the power of seizure and detention as being unnecessary. They consider that infringements of the regulations are sufficiently dealt with under the other parts of the Clause.

Clause 7.

The Committee approve this Clause subject to some drafting amendments suggested in Appendix C.

Clause 8.

The Committee approve this Clause, but they express the view that private aircraft flying in their own country and not for hire should be expressly exempted from the obligation of carrying logs.

Clause 9.

Subject to the details of these regulations being considered by Special Committee No. 2, the Committee approve this Clause.

Clause 10.

The Committee approve this Clause subject to the exceptions already suggested by them in their recommendation to Article 33 of the Draft Convention. (See Appendix A.)

Clause 11.

The Committee recommend the substitution of an alternative clause proposed by the Secretary to the Post Office, which is set out in Appendix C.

Clause 12.

This Clause is very important to private landowners. It proposes to deprive the landowner of his frequently asserted right to the air space over his land usque ad cœlum. To retain this doctrine in its entirety would be fatal to civil aeronautics. On the other hand, to allow unrestricted flying over private property at all altitudes would interfere with the reasonable rights of landowners. The interference would take the form either of trespass or of nuisance.

The Committee think that the following recommendations would, on the one hand, give reasonable protection or compensation to landowners, and, on the other, impose on aviators no obligation which could not be covered by insurance at reasonable rates, and so avoid hampering the development of civil aeronautics.

The Committee therefore recommend that the Bill should provide as follows:—

(a) No action for trespass should lie except for material damage to person or property, whether caused by flight ascent or landing or the fall of objects from aircraft.

(b) That this right of action for trespass should include one for injury caused by the assembly of persons on the landing or ascent of aircraft elsewhere than at authorised aerodromes or landing places.

(c) That the obligation on the aviator in an action for trespass should be absolute, negligence not being a necessary element in this liability and "unavoidable accident" no defence.

(d) That an action for nuisance should lie for damages only, and then only if breach of flying regulations is proved as well as actual nuisance.

(e) That special flying regulations should be made in connection with the ascent and landing from or at authorised aerodromes and landing-places, and for the area around the aerodrome or landing-place over which aircraft must necessarily be at low altitudes. Nuisance and injury to the value of property caused by the existence of aerodromes and landing places are met by paragraph 16 of this report.

(f) That the power of seizure and detention proposed in Clause 12 should be limited to what is necessary to establish the identity of the aviator and his aircraft.

Reasonable apprehensions may be entertained of nuisance being caused by the frequent flight of aircraft at low altitudes along regular routes, but the Committee are not at present in a position to make any recommendation as to limitations of altitude being prescribed by regulation.

Clause 13.

The Committee think that it is inadvisable to name in the Clause a fixed percentage for salvage reward, but that the amount to be paid should be left to the discretion of the appropriate tribunal.

Clause 14

The Committee approve this Clause.

Clause 15.

The Committee understand that this Clause contemplates regulations which will minimise damage to aircraft while under detention. As to the nature of such regulations the Committee have obtained advice from Special Committee No. 2. It appears that the main causes of damage to aircraft under such conditions will be (i) weather, (ii) interference by spectators. Without making suggestions in detail the Committee think that the regulations should provide that the person detaining the aircraft should agree to any reasonable proposal put forward by the pilot for the avoidance of damage—e.g., mooring the machine head to wind, with the assistance of earth-screws or stakes, if such are available, and arranging for a guard or other suitable means of preventing damage by spectators. It seems that the mooring of the aeroplane is more important than its protection from the rain, in cases where the aircraft is only to be detained for some hours.

Clause 16.

Subject to a note in Appendix C the Committee approve this Clause.

Clauses 17 and 18.

Subject to a drafting amendment in Clause 18, the Committee approve these Clauses.

Clause 19.

The Committee think that the language of Section 2 of the Aerial Navigation Act, 1913 (which closely corresponds with this Clause) should be substituted. Recent experience has shown the danger of foreign aircraft flying over prohibited areas of strategic importance. The Committee think that the regulations contemplated, and, indeed, the Clause itself should be made more drastic, and that anyone flying over an area prohibited for naval or military reasons should be liable to be fired at by a Commissioned Officer in charge of an anti-aircraft gun, in his discretion, even without a preliminary signal, in a case of urgency.

Clause 20.

The Committee think that this Clause contains useful provisions which might well be extended to all British Possessions, subject to the right of the legislature of any such Possessions to alter them.

Clauses 21 and 22.

The Committee approve these Clauses.

Clause 23.

The Committee think that Clause 23 would be clearer if recast, and that it should provide that the Act and regulations should apply, mutatis mutandis, throughout all British Possessions, unless and until the legislature of any British Possession otherwise provides, subject to the exception that local legislatures should not be empowered to modify provisions of an international character, that is to say, those relating to registration, collisions, aircraft papers, and signals of distress

Clause 24.

It appears to the Committee that certain provisions in the Bill, at least those contained in Clause 12, should apply to aircraft belonging to His Majesty. They, therefore, recommend that this Clause should be so drafted as to make the Bill applicable to aircraft belonging to His Majesty, except in so far as any part thereof, other than Clause 12, may be excluded by Order in Council.

7. It will be observed that the Bill contains no provisions dealing with aerodromes or landing places. The Committee have considered the question whether all aerodromes (including Flying Schools) and landing places should be State owned. They have come to the conclusion that this is not desirable, but that, while private persons and companies should be allowed to establish and own aerodromes and landing places, these should be subject to

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Government licence, inspection, and regulation in some form. It seems to the Committee that reasonable regulations will go a long way towards preventing injury and annoyance to the public, and will at the same time protect aircraft owners from frivolous claims and proceedings. As experience accumulates the regulations will, no doubt, require modification and different regulations will be appropriate according as the aerodromes and landing places are in populous or sparsely-populated districts. In licensing aerodromes the State will, no doubt, have regard to strategic considerations, and provision should be made that when war is imminent any privately owned aerodromes that may have been allowed to be established, with their equipment, should at once be available for military use.

The Committee have already touched upon the necessity of some flying regulations applicable particularly to aerodromes. With regard to this and any other regulations for preventing injury and annoyance to the public, they do not offer detailed suggestions, but they think that Section 126 of the Factory and Workshop Act, 1901 (Special Orders), furnishes a satisfactory precedent for the scope of the powers to make regulations to be conferred on the appropriate Government Department.

8. The consideration of aerodromes and landing places involves the question of the compulsory acquisition of land for their establishment. The Committee are of opinion that the Government should be given similar rights of compulsorily acquiring land for aerodromes and landing places as it has for acquiring land for military works. Private persons wishing to obtain powers for the compulsory acquisition of land for the establishment of aerodromes must proceed by way of private Act of Parliament or provisional order. Such powers would, presumably, have to include powers to cut down trees, remove wire, or perform other similar acts on adjoining land not acquired.

9. It is scarcely within the province of the Committee to recommend alterations in procedure relating to the compulsory acquisition of land. At the same time, they think that it would be of great assistance to the development of aeronautics generally if the determination of the amount of compensation payable to the landowner could be made the subject of a more simple and a less expensive procedure than that at present employed in private Bill legislation. The Light Railways Act of 1896 affords a useful precedent for the avoidance of some of the difficulties. With regard to the amount of compensation payable to the landowners the principles of the Land Clauses Acts have been construed to the landowner's advantage through the establishment by recent judicial decisions of the doctrine known as "special adaptability," whereby the landowner can, in fact, obtain a sum representing a value greater than the ordinary market value of his land where he can show that the land is specially adapted for the purpose for which it is being compulsorily taken. This judicial doctrine has, in some instances, increased the amount payable to landowners, and it is one which the landowner might pray in aid successfully in the case of the compulsory acquisition of land for an aerodrome. The Committee think that the application of this doctrine should be specifically excluded.

10. The Committee have also considered the subsidiary question of claims for compensation by persons, the value of whose property has been impaired by reason of the establishment of an aerodrome in the vicinity. They think that claims for such compensation should be entertained at any time within five years from the date of the establishment of the aerodrome, and that such compensation should be payable from State funds in the case of an aerodrome established by the Government and by the proprietor in the case of a privately owned aerodrome.

11. The Committee think that the matters referred to in paragraphs 7 to 10 inclusive, above, should be the subject of legistion, and that as they are all matters affecting the development and regulation of aeronautics from the general point of view, they can well be dealt with by the addition of further clauses to the Aerial Navigation Bill under consideration.

In conclusion, the Special Committee wish to record their warm appreciation of the assistance rendered by the Secretaries upon whom has fallen much work, which has been so ably carried out as greatly to facilitate their proceedings.

Sydenham (Chairman).	*W. Joynson-Hicks
Butler Aspinall.	*J. Whiteside McCay, Maj.-General.
J. H. Balfour Browne.	G. E. P. Murray.
M. D. Chalmers.	J. W. Pringle, Colonel.
Drogheda.	E. Elvey Robb, Captain.
W. Barnard Faraday.	W. Sempill, Wing Commander.
R. M. Groves, Wing Captain.	*W. P. Schreiner.
L. N. Guillemard.	E. R. Wayland, Lt.-Colonel.
*G. Holt Thomas.	Jan. 2nd, 1918.
D. O. Malcolm, Secretary.	

Those members whose names are marked with an asterisk append the following reservations to the Report:—

We concur in the Report with the reservation that in our opinion State ownership of aerodromes and landing places is necessary in the interests of national defence and highly desirable, also, for commercial purposes.

(Signed) J. Whiteside McCay.
W. P. Schreiner.

I desire to add a few words by way of reservation to Clause 6 of Part II of this Report, so far as it affects Clause 12 of the Home Office Bill.

Our recommendations seem to leave it open to an aviator to fly over private property at any height he likes unless actual material damage is proved, and even if a nuisance is created the aviator is still free if he keeps within certain regulations, the terms of which we have not considered.

In my view, though the whole doctrine of the right of the landowner to property in the air to an indefinite height must be curtailed, still, I am clearly of the opinion that the public will demand, and rightly, a limit above which (except under stress of weather) aviators must fly above private property, and that any persistent flying under this height should be preventable by injunction.

The actual height should, I think, be the subject of consultation with the other sub-committees, but probably somewhere between 2,000—3,000 feet would be fair.

(Signed) W. Joynson-Hicks.

I concur in the Report with the following reservations, which are only made with the object of avoiding restrictions which may hamper development of a new mode of transport, of which very little is known at the present time, whereas, as experience accumulates, it will be easy to make such regulations as may be necessary:—

Part I, Paragraph 1.

Whilst it is necessary to confer upon the Home Secretary or other authority the right to prohibit the navigation of aircraft over prescribed areas, I should favour the expression of an opinion from this Committee that the prohibition of flying over London should be repealed, also the regulations as to aircraft coming into England. Many of the regulations made were made naturally for war purposes. Compulsory landing of aircraft in England, for instance, must affect British aircraft more than any other, as it is probable that if compulsory landing is insisted upon in England, compulsory landing will be insisted upon in other countries. It will be easy to make such regulations when circumstances show that it is necessary. The Committee, moreover, suggest that the powers at present wielded by the Home Office and Board of Trade will be conferred upon the Air Ministry, in which I quite concur, but it makes it more necessary to leave the new authority a free hand to make such regulations as circumstance may prove necessary in the future.

Part II, Paragraph 6, Clause 5.

I see no reason at the present time for requiring any Government certificate for private fliers, nor for restricting the use of the flying machine in this respect any more than a motor-car or boat, especially as the public is protected by the fact that the flier himself is always running a greater risk than anyone else. The conditions of the Aero Club certificate have in the past been quite sufficient.

Paragraph 6, Clause 12.

Ditto. I am not in agreement with the Committee that the Bill should provide any regulations as to the altitude at which pilots should fly. I see no reason to suppose that in the immediate future more machines will be in use at aerodromes than were in use previous to the war, and if circumstances show that a great many more machines are in use, to the danger or annoyance of the public, such regulations as may be necessary may then be made. To hamper at the present time a new development with regulations, which might be quite unnecessary, would probably restrict development.

Paragraph 6, Clause 14.

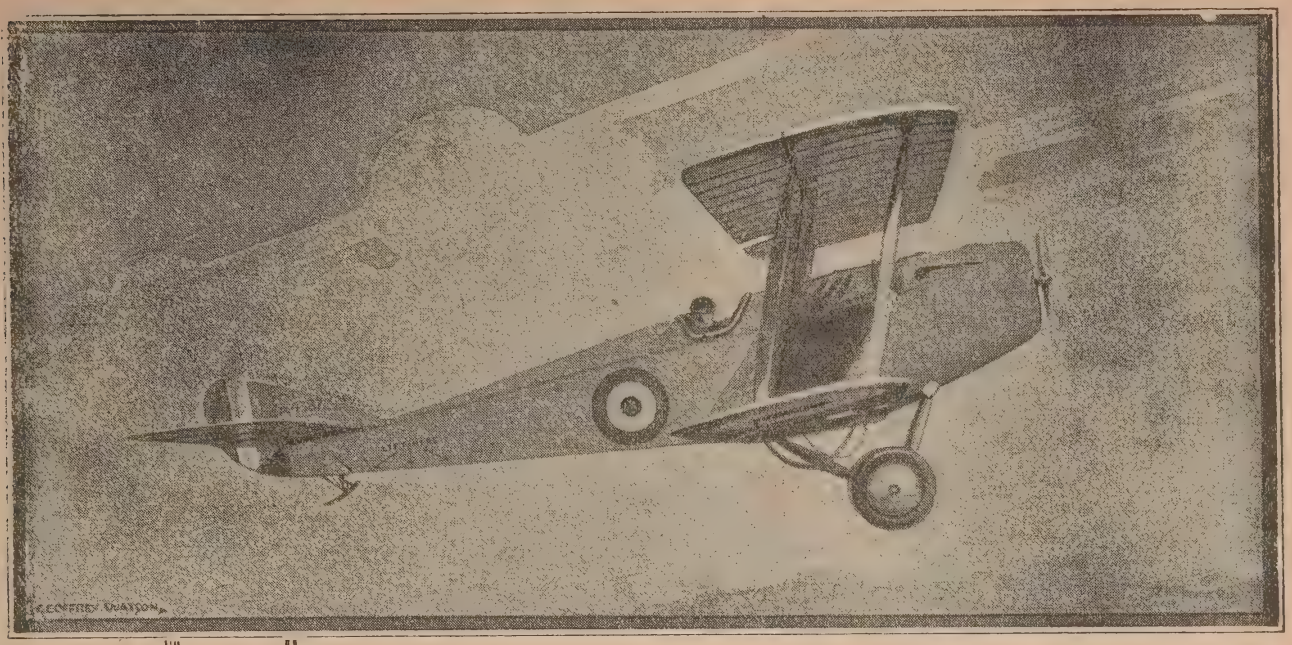
I am not in agreement with giving the Police such powers of search of aircraft and the persons therein, although it might be well to give the Secretary of State power to make regulations on this point in the future should they be necessary.

Paragraph 7.

I am not in agreement with any control whatever over aerodromes and landing places at the present time other than the powers which existed before the war, and which have proved quite satisfactory up to the present time. Any control must tend to hamper the establishment of private grounds and landing places, which is undesirable in the early stages of development.

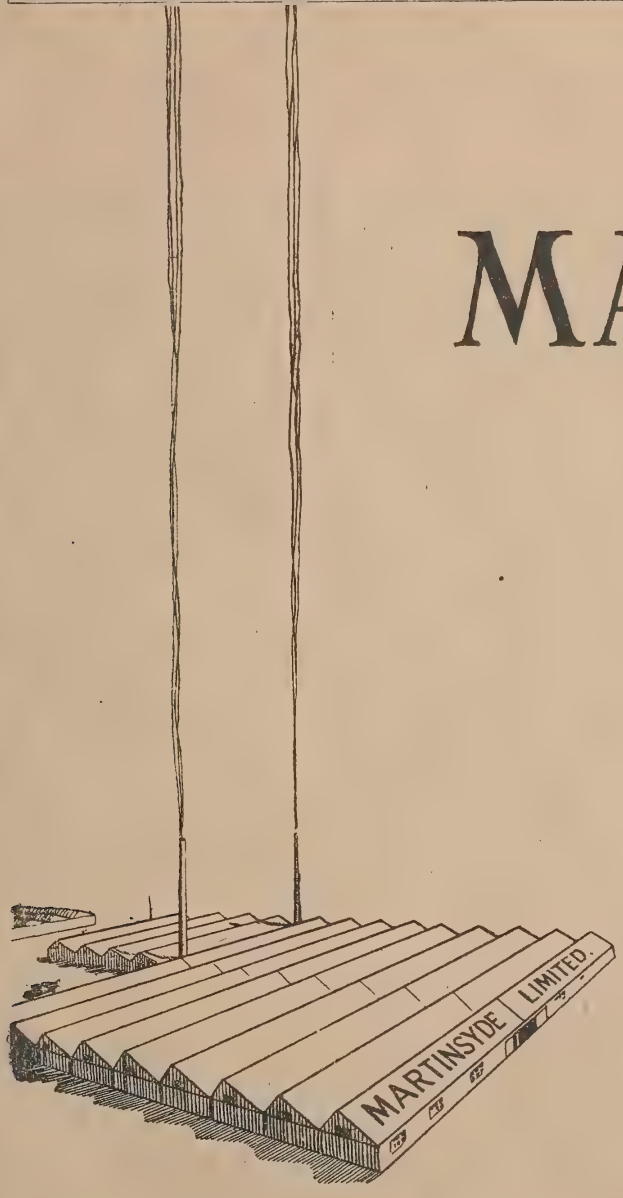
The above reservations I have made solely with the object of permitting as free as possible development of the use of aircraft. I do not, however, foresee any such development in the immediate future as will necessitate regulations other than those as existed before the war, and, in the absence of more complete knowledge of the subject, I would suggest that, wherever possible, conditions should be left as they are until our experience of the subject has so accumulated that we have a definite knowledge of what regulations are expedient and desirable.

(Signed) G. Holt Thomas.





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General Comments.

Referring back now to Chapter I of the Main Committee's Report, the first paragraph which seems to call for comment is that numbered 8, which deals with Clause 4 in the Special Committee's Report. On this point one disagrees cordially with both Committees, solely in the interests of the good name of British Aeronautics.

Emphatically it is not enough to certify the airworthiness of a type of aircraft intended for passenger service. At the present day it may be so, for we have to deal with a very few firms, each of which has a high reputation, and so, when the first machine of a type is certified as airworthy one may rely absolutely on the rest of the type being fully up to standard. No firm of good repute would allow its reputation to suffer by allowing bad material or workmanship in the rest of the series.

But we have to legislate for the future, and there will certainly come a time, and that will be as soon as ever there is a boom in civilian flying, when small firms, or possibly big firms with shady antecedents, will rush in to make cheap aeroplanes. They may make their first machine thoroughly well, and of a type which is an absolute copy of a certified type, so that there can be no dispute about its being granted its certificate. Yet, as soon as the first machine is passed, the rest may be put together anyhow from any sort of material. This will be particularly the case with cheap two- and three-seater machines turned out for pure "joy-ride" trips at a low price. It has happened, notoriously, in shipbuilding; it has happened with bicycles, and it has happened with motor-cars. We have had coffin-ships, and we have already had death-trap aeroplanes—even aeroplanes of Government designs—and we must guard against such things in future.

An Aerial Lloyd's.

What is wanted is an Aerial Lloyd's, and we have practically such a thing in being in the Aeronautical Inspection Department. Granted that at times the A.I.D. has been a jest and a by-word, owing to the pressure of war needs forcing the Department to engage butchers and bakers and candle-stick makers. Nevertheless, there are among the thousands of A.I.D. personnel a good many hundreds of thoroughly sound engineers, who are now, by virtue of their experience during the war, thoroughly competent to inspect aeroplanes and to certify whether they are fit for public service.

General Bagnall-Wild and his Department are not so likely to be busy on Service machines for the next few years that they cannot set to work to organise such an Inspection Department as one suggests. Not only should every machine intended for passenger-carrying or for hire be inspected by the A.I.D., but it should be possible for every manufacturer of aeroplanes for private owners to submit his machines to inspection—for a suitable fee.

No sane person would think of buying a machine which did not hold the A.I.D.'s certificate as A1, and so the quality of British aircraft would be maintained in a way which will be impossible when Blackleg Aircraft, Ltd., starts in during the boom to get rich quick and to turn out cheap and nasty aeroplanes for an unsuspecting public. Therefore it is distinctly in the best interests of the Aircraft Industry that every individual aeroplane intended for public service or for hire by private persons should be inspected compulsorily, not only when new, but at regular and frequent intervals, and that machines intended for sale should be inspected at the option of the owners.

A Suspicious Point.

One confesses to suspicions about Trade influence being at work on the Committee to produce such a strange dictum. It is evident that the less inspection there is the less trouble and expense there will be for the Aircraft Industry. One would therefore impress upon the Industry that British Aircraft constructors are not always going to be as righteous and as honourable and as trustworthy as are the members of the S.B.A.C. to-day. Therefore, despite the extra trouble and expense, such inspection as one suggests is in the interests of the Industry, and so the Aerial Lloyd's must be formed.

If the objection comes from the Air Ministry, then the S.B.A.C. must form it in their own interests. And if the Air Ministry and the S.B.A.C. both object, then the Insurance Companies who intend to insure aircraft and their pilots and passengers must form an inspection department, for certain it is that the public, when it is a little wiser, will insist on having A1 certificates on the aircraft which it uses.

One would perhaps feel less suspicious about this business if Special Committee No. 1 had not gone out of its way to cast the onus of responsibility on the unfortunate pilots—who, incidentally, had no representatives on any of the Committees. It is pure rot to talk about proper inspection hampering the developments of civil aeronautics. It is exactly the other way round. Proper inspection properly advertised will be the one thing to give the public confidence in the machines in which they are asked to fly.

Competence of Pilots.

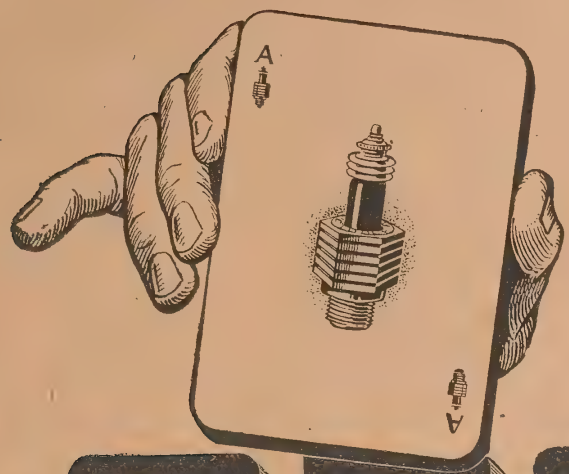
As regards paragraph 9, certainly pilots should be made to prove their competence before being let loose in the air, and every pilot, whether engaged on public service work or merely an owner flying his private machine, ought to be liable to have his certificate cancelled if proved guilty of incompetence or of flying to the public danger. History always repeats itself, and in due course we shall have a "Daily Mail" "anti-airman" agitation as we had an "anti-motorist" agitation in the past.

Therefore it behoves us to see that our civilian pilots behave in a seemly manner and do not play the fool in the way which has been made notorious by sundry young cads in the Royal Air Force—and the R.N.A.S. and the R.F.C.—during the war. It is true that during the past four years people have become accustomed to being killed, which is an excellent thing for the future of aviation. Before the war the death of an aviator was a serious set-back to flying. To-day, thanks to the war, nobody worries about it, except immediate friends and relatives. Consequently the incompetent pilot who breaks his own neck in an aerodrome does no harm to aviation, nor to anybody except himself—and not always then. But if he goes outside and spoils somebody else's allotment or smashes somebody's roof, he makes aviation unpopular. Therefore he must be restrained from doing so.

Consequently one entirely disagrees with the Main Committee's dictum that "the safety of the public will probably be sufficiently ensured by the interest of the private navigator in acquiring sufficient skill to ensure his own safety." In one's personal experience the most blazingly incompetent pilot is always the one who takes the least pains to ensure his own safety. Which fact, apparently, the Committee has not had sufficient experience to recognise. Therefore one argues that the private owner should be subjected to flying tests just as severe as those imposed on the pilots of public-service aeroplanes, and one entirely disagrees with the statement that "the absence of obligatory certificates in the case of the private navigator seems to be reasonable."

Aerial Trespassers.

Clause 12, in No. 1 Committee's Report, is of considerable interest, for it bears directly upon the caddish behaviour of some young pilots. One has heard of horses bolting and injuring or killing people owing to pilots



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diving at vehicles on the road, or at teams working in the fields. Behaviour of this sort over private property should obviously come under the heading of trespass and the pilot should be liable for damages. Similar behaviour in a public place or road should be liable to prosecution under the common law.

Therefore one is quite in agreement with the Committee's dictum that "unrestricted flying over private property at all altitudes would interfere with the reasonable rights of landowners." One quite agrees that steady flying at a height of 2,000 ft. or more is uncommonly boring, and that it is much more amusing to fly low and chase cows and horses and pigs, and frighten old women, and generally create a certain liveliness in the existence of the agricultural community. But it has got to be stopped, in the interests of civil (in both senses) aerial transport.

Paragraphs (b) and (c) of this Clause 12 may seem rather hard lines, in the case, for example, of a forced landing, but a pilot who has good judgment can generally make sure of landing so near a road or on such open ground that the actual damage done by the assembly of the populace shall be practically negligible. Moreover, in many parts of England to-day the aerodromes are so close together that anyone flying at a reasonable height is constantly within gliding distance of a proper landing place.

Aerodromes.

Let us turn now to paragraph 7, in No. 1 Committee's Report. This question of aerodromes is of vital importance to the future of aviation and demands deep consideration. Obviously a private owner should be permitted to have his own private aerodrome, and one is doubtful whether a gentleman's park used for such a purpose should be subject to "Government licence, inspection, and regulation." Certainly Government officials should have access to it, just as gas and water and electric light and sanitary inspectors have access to private houses. Otherwise one can see well-to-do sportsmen, bored stiff by the absence of a war, taking to smuggling by aeroplane just for the fun and adventure of it.

Consequently Customs officials must be allowed access to private aerodromes at all hours, especially when the owner is "just practising a little night-flying," or "enjoying a trip in the cool of the dawn." But Government regulation is another matter.

Government Supervision.

On the other hand, aerodromes run by individuals or companies, either as landing grounds for transport services, as training grounds for pilots, or as exhibition grounds, should certainly be subject to "licence, inspection, and regulation." This regulation should extend to the supervision of tests for pilot's certificates, so that bogus pilots may be eliminated.

One has heard of a case in which an aerodrome proprietor, a pilot, and an official Aero Club observer in collusion certified that a foreign pupil had passed his tests when in fact he had not done so. It is understood that the case is now before the Committee of the Royal Aero Club, and if the charges are proved it is hoped that prosecutions of all concerned will follow, as well as permanent disqualification from further participation in British or international aviation. That such a case should occur, even as a charge, is the best possible argument in favour of Government regulation of semi-private aerodromes.

Compulsory Powers.

Paragraph 8 is of interest in that it presages the placing of aerial transport companies on the same footing as railway companies. That is to say, if a transport company requires a landing ground in a certain place it will be able, if the proposed Bill becomes an Act, to put a private Bill through Parliament and acquire the necessary land by Act of Parliament.

This is particularly noteworthy because it will put aviation on a more permanent legal footing than anything which has been done up to the present. Aircraft firms will then be definitely on a level with steamship lines and railway companies.

On the whole one is impressed by the fact that No. 1 Committee was composed of level-headed men who had a very good working knowledge of their subject. One can hardly disagree with them on any point, except that of the inspection of aircraft, and there one feels that they have been misled. The personal opinions expressed at the end of the report are purely personal opinions, and one does not feel inclined to argue with them individually when as a body the Committee's findings are so sound.

One hopes next week to deal with the work of No. 2 Committee, which was concerned with "Technical and Practical Questions as to the Possibilities of Performance of Aircraft, and as to the Requirements of Aerial Services."—C. G. G.

A MATTER OF PRECEDENCE.

A Royal Warrant published in the "London Gazette" of Nov. 1st varies the order of precedence of certain classes of the Royal Victorian Order. The Order is to rank, as before, immediately after the Order of the Indian Empire and before the Order of the British Empire, and "in all solemn ceremonies, places, and assemblies" the senior classes of these Orders will continue to rank as follows:—1st Class—G.C.I.E., G.C.V.O., G.B.E. 2nd Class—K.C.I.E., K.C.V.O., K.B.E.

The Third Class (Commander) of the Royal Victorian Order (C.V.O.), however, takes a lower place than before. This change is consequent on an ordinance of June 1st last year raising holders of the ranks C.B., C.S.I., C.M.G., and C.I.E. to the precedence of Commanders, though they retain the title of Companion. The result is that, whereas the C.V.O. formerly ranked next to Knights Bachelor and before the C.B.E., C.B., C.S.I., C.M.G., and C.I.E., it now takes precedence immediately after the last-named.

The Fourth Class of the Royal Victorian Order (M.V.O., 4th Class) also takes a lower place than before, being now placed below the D.S.O. This change corresponds with the alteration in the order for the wearing of decorations notified in an Army Council Instruction issued in the month of July. The changes then indicated were the result of an inquiry by the King into the general question of the precedence of decorations, and among them was the placing of the D.S.O. above the Fourth Classes of the Royal Victorian Order and the Order of the British Empire.

The Warrant does not affect the position of M.V.O.'s (5th Class), who continue to rank next to the eldest sons of Knights Bachelor.

PERHAPS.

Mr. John Steel in a recent issue of the "National Review":—

"The prospect of daylight raids by enormous fleets over half the area of Great Britain is," he writes, "the least we must be prepared to meet in any future war. The mobilisation of modern sea fleets and land armies takes at least a month. The mobilisation of an air fleet could be completed in a day. An aerial fleet, ostensibly built for commercial traffic, is available for war at very brief notice.

"At a given signal the squadrons are mustered at their aerodromes. Standardised bomb racks are substituted for the ordinary fittings. Bombs are delivered by motor-lorry from the State arsenals. Within a few hours of the mobilisation orders being issued the squadrons are ready to start. They travel at a hundred miles an hour or more. Very possibly no ultimatum is issued, and there is no formal declaration of war.

"They reach the territory of their victim at nine p.m. one evening, mobilisation having begun at dawn, and being executed with profound secrecy. They destroy the arsenals, naval bases, and one or two civilian centres, returning immediately to their own aerodromes to refit and reload.

"In the absence of genuinely masterful defences all nations will presently lie at the mercy of any Power sufficiently unscrupulous to wage aggressive wars in this fashion."

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THE FUTURE OF THE AIR MINISTRY.

On December 18th, the "Daily Express," which is usually singularly well informed as to the internal workings of the Government, published a circumstantial statement to the effect that the Air Ministry is to be abolished, that Lord Weir is to resign, and that the R.A.F. is to pass under the control of the War Office.

On the 19th the following official pronouncement appeared in the daily Press :—

> The Secretary of the Air Ministry has issued the following for publication :—
>
> The statement that the Air Ministry is to come to an end is totally inaccurate. No such proposal is under consideration.

The two statements are not in fact so incompatible as one might imagine at first sight.

It has been common talk in certain Naval circles for many months that the Navy is to have its own Air Service in the not far distant future. The Navy has always been the spoilt child of the British People, and, like a spoilt child, as soon as its despised toy, the R.N.A.S., was taken away from it, it began to cry to have the toy back again. Knowledge of one's fellow-countrymen and their history makes it plain that the Navy has only to cry hard enough and it is bound to get the R.N.A.S., or, as an alternative, a nice new Air Service instead of the old and somewhat damaged one.

The British People, being a just if foolish parent, cannot then very well avoid giving back to the quiet and long-suffering Army its equivalent toy, the R.F.C., which was taken away from it against its will after it had transformed the toy into a highly efficient weapon. It is true that the said weapon was lent to it again for the duration of the war, and used with great effect, but it is clear that the Army must eventually have its own Flying Corps.

Obviously, as stated many times over in this paper, if there is to be an R.N.A.S. and an R.F.C., or their equivalents, there ought also to be an Imperial Air Force for purely aerial operations—or an Independent Air Force, if the title is preferred for the time being. But it is highly probable that a pacifist and vote-catching Government would not dare to risk its popularity among the unthinking mob by laying down an adequate establishment for such an Air Force.

Therefore the way out seems fairly simple. The Naval Air Service can be supported out of the Navy's finances, and the R.F.C.—camouflaged under the name of the R.A.F.—can be supported by the Army. The Air Ministry can then be turned into a Civil Service department, for purposes of civil aerial transport, and can be allotted huge funds, such as would never be granted to our despised army of professional butchers—since, in our insanity, we have decided to abolish universal service even on a territorial basis. And out of these funds the Civil Air Ministry can set up and maintain an Imperial Aerial Transport Service, manned by so much of the R.A.F. as does not join the R.N.A.S. or the R.F.C., or return to private business.

Thus skilfully disguised as a Civil Service we can build up an Imperial Air Fleet with which some future Trenchard will do in the next war what our great general was prevented from doing in this war by the idiocies of the Technical Department and by the premature ending of the war itself. In fact, our future civil aerial transport fleet will probably save the nation in the next war much as the Mercantile Marine and the trawler patrols saved us in this war, by doing the work which the Navy was either unable or incompetent to do. Only, the work will be offensive work over enemy territory instead of defensive work round our own coasts.

Thus the Air Ministry may not "come to an end"—*vide* the official statement—though it may cease to be a department concerned directly with war, to which extent the "Express" may be perfectly correct. If that be so, none will regret the change except the gangs of incompetents who have dug themselves in at the Hotel Cecil, more commonly known as the Hotel Bolo. There is, however, the lamentable probability, amounting almost to a certainty, that unless we have a very strong and able Air Minister those same incompetents will—to use the old aviation phrase—hot-stuff themselves into all the best jobs, and so give one all the trouble over again of fighting official incompetence. One is consoled, however, by the thought that when once Peace is signed only the Law of Libel will hinder one's fight for progress.

It is to be noted that no denial is given to the statement that Lord Weir is to resign. His departure from the Air Ministry is to be regretted, for he knows aeronautics as does no other personage of Cabinet rank, besides being himself an engineer and therefore able to understand technical matters. Nevertheless one cannot help feeling that as a leader in the reconstruction of British Industry his high abilities may be of greater service to the Empire than if he were a mere Minister in a weak-kneed Coalition Government.

Lord Weir is too white a man to dabble in the dirty puddles of politics, and if he made a mistake as Air Minister it would afford one no pleasure to assist in breaking him, as it does in the case of the ordinary politician. Therefore one feels that he is serving his country as well as his own interests in returning to his pre-war occupations—to which, one hopes, he will add a very active participation in aircraft work, for it would be a thousand pities if all his dearly bought knowledge of the Aircraft Industry were to be wasted.

It is too much, perhaps, to hope that his successor may be as able a man as Lord Weir, but we can all hope at least that he may be a man of ordinary common sense, and of sufficient strength to weed out some of the wasters in the Hotel Bolo and its annexes. It is even possible that we might have a real stroke of luck, and that, as the result of the shutting down of the Ministry of Munitions, Mr. Winston Churchill might take over the Air Ministry. Certainly his immense, if sometimes erratic, energy would instil life into what may very well become a moribund business if Civil Aerial Transport is left to the ordinary type of politician or Government official.

Mr. Churchill's intimate knowledge of flying in its early days, his personal experience as an aviator, and his well-known faith in the future of aviation, together with his active imagination, his contempt of all precedents, and that quality of determination which has left him undefeated by all the abuse which has been poured upon him during the war, mark him as the man most fitted to take charge of the immediate future of British aeronautics.—C. G. G.

POST-WAR WORK.

To the V.A.Ds., W.A.A.Cs., W.R.N.Ss., W.R.A.Fs., and all the women workers who have so nobly served their King and country, the Church Army offers a warm welcome when the war work is ended. They have numerous openings in their Social, Parochial, and Nursing Departments for earnest Christian women between 21 and 35 years of age. Salaried posts are guaranteed to successful candidates, with provision for sickness and old age.—Apply to Miss Carlile, 61, Bryanston Street, Marble Arch, London, W.1.

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GEOFFREY WATSON

FROM THE "LONDON GAZETTE."

War Office, Dec. 17th.

The King has been pleased, on the occasion of His Majesty's recent visit to his Army in the Field, to make the following appointment to the Royal Victorian Order:

K.C.V.O.

Lt.-Gen. Sir David Henderson, K.C.B., D.S.O.

Air Ministry, Dec. 17th.

R.A.F.—The following temp. appts. are made:—Col. (Staff).—Lt.-Col. F. H. Cleaver, D.S.O., and to be actg. Col. while so empld., Dec. 7th.

Staff Officer, 1st Cl.—(Air.)—Lt.-Col R. G. Cherry, M.C., vice Lt.-Col. (actg. Col.) F. H. Cleaver, D.S.O., Dec. 7th

Flying Branch.—Capts. to be actg. Majs. while empld. as Majs. (A.):—H. L. H. Owen, A.F.C., G. M. Turnbull, Dec. 4th.

Capt. E. C. Emmett, M.C., D.F.C., is granted the actg. rank of Maj. (without pay and allowances of that rank) while specially empld. (A.), Nov. 30th.

Capts. to be graded for pay as Capts. while empld. as Capts. (A.):—M. J. M. Bryan, P. C. Wood, Nov. 1st.

Lts. to be actg. Capts. while empld. as Capts. (A.):—C. H. R. Lagesse, D.F.C., June 19th; F. C. G. Broome, D.F.C., Nov. 14th; H. O. McDonald, Nov. 15th; D. H. Howitt, Nov. 24th.

Sec. Lt. (Hon. Capt.) H. W. Stockdale to be actg. Capt. while empld. as Capt. (A.), Nov. 15th.

Lt. B. Dangerfield, M.C., to be actg Capt. while empld. as Capt. (O.), Nov. 7th.

Sec. Lt J. Whitehead to be actg Capt. while empld. as Capt. (O.), Nov. 10th.

Lt. C. H. Collins to be Lt. (A.), from (T.), Sept. 12th.

Lt. H. A. Edridge-Green to be Lt. (A'ship), from (Ad), Aug. 21st.

Sec. Lt. W. F. Dollery, D.F.C., to be actg. Lt (K.B.) while empld. as Balloon Comdr., Nov. 16th.

Lts. to be Lts. (A.), from (Obsr. Officers):—H. W. R. Banting, Sept. 9th; P. E. G. Heffer, C. J. McGrane, Nov. 15th; D. P. Hadow, M.C., Nov. 16th; N. S. Garrett, Nov. 17th; G. K. Mappin, P. W. Booth, Nov. 19th; D. M. Cassidy, M.C., Nov. 23rd; A. E. Love, Nov. 24th.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lts. (A.):—W. Meredith, June 20th; W. P. Bryden, July 6th; W. P. Conly, Nov. 15th; D. B. Hughes, R. E. Bolton, A. Arnott, C. W. Miller, Nov. 18th; O. S. Parker, J. R. Paviman, F. Cardwell, Nov. 19th; T. V. Symter, S. F. Morice, Nov. 21st; G. L. Grey, E. P. Gates, W. I. Bannatyne, R. S. Griffiths, Nov. 22nd; D. Fraser, Nov. 23rd; W. L. Reeler, Nov. 25th.

The following are granted temp. commns as Sec. Lts. (A.):—W. H. Norman (Lt., R.F.A.), and to be Hon. Lt., Aug. 13th; C. D. Davidson (Sec. Lt., S. Staffs. R.), Sept. 22nd (substituted for notifications in "Gazette," Oct. 11th and in "Gazette," Dec. 6th); J. B. E. Phillips (Sec. Lt., R.W. Surr. R.), Oct. 4th; W. C. V. Fowler (Sec. Lt., R. Suss. R., T.F.), Oct. 31st; S. Jones (Sec. Lt., Welsh R., T.F.), Nov. 6th; G. B. Mason (temp. Sec. Lt., Glouc. R.), Nov. 13th; H. R. Hill, M.C. (temp. Lt., S.W. Bord.), and to be Hon. Lt.; J. J. St. J. W. Devey (temp. Lt., Durh. L.I.), and to be Hon. Lt., P. E. G. Marsh, M.C. (Lt., A.S.C.), and to be Hon. Lt.; W. P. Mills (temp. Sec. Lt., Notts. and Derby. R.); D. R. L. Raulton (Lt., York. and Lanc. R.); E. H. Bennett (Lt., Gord. Highrs., T.F.), and to be Hon. Lt.; A. D. Young, M.C. (Lt., W. York. R., Spec. Res.), and to be Hon. Lt.; S. G. A. Brook (temp. Lt., York. and Lanc. R.), and to be Hon Lt., Nov. 15th.

L. R. Hibbert (Capt., R. Lanc. R.), and to be Hon. Capt., Nov. 16th; L. A. Brett (Lt., Lond. R., T.F.), and to be Hon. Lt.; F. Brownlee (temp. Lt., R.W. Kent R.), and to be Hon Lt., Nov. 18th; R. Boumphrey (Capt., Lan. Huss., T.F.), and to be Hon. Lt.; J. H. MacMillan (Lt., E. Ont. R., C.E.F.), and to be Hon. Lt.; S. R. Holl (Sec. Lt., Lond. R., T.F.), Nov. 19th; H. F. Waldock (temp. Sec., Lt., Royal Marines), Nov. 20th; R. A. Snelgrove (Sec. Lt., Notts. and Derby. R., T.F.); R. A. Rowberry (temp. Sec. Lt., R. War. R.); C. McH. H. Sutherland (Sec. Lt., Gord. Highrs., T.F.), Nov. 22nd.

The following is granted a temp. commn. as Sec. Lt. (A. and S.):—H. W. Lester (late F./Sub-Lt., R.N.), and to be Hon. Lt., Oct. 8th (substituted for notification in "Gazette" of Oct. 15th).

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (Obsr. Officers):—C. F. Primrose, Sept. 1st; R. C. Van der Ben, M.C., Sept. 8th.

The following are granted temp. commns. as Sec. Lts. (Obsr. Officers):—R. Stafford-Langan (temp. Sec. Lt., Leins. R.), June 6th; J. T. H. Jackson (temp. Lt., R.E., attd. A. Sig. Service), and to be Hon. Lt., Aug 28th; J. Montgomery (Lt., R. Sco Fus., T.F.), and to be Hon. Lt., Sept. 12th; D. Hodson (Lt., Mahrattas, I.A.), and to be Hon. Lt., Oct. 8th; G. Shallow (Lt., I.A.R.O.), and to be Hon Lt., Oct. 9th; R. T. Carter (temp. Lt., E. Surr. R.), and to be Hon. Lt., Oct. 14th; A. F. Mauton (temp. Sec. Lt., R. Lan. R.), Nov. 29th.

Lt. H. Kent (Lt., Lpool. R.), relinquishes his commn., May 8th.

Capt. F. M. L. Barr relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt., Dec. 18th.

Sec. Lt. (Hon. Capt.) R. H. Wetherall relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Capt., Dec. 18th.

Lt. E. B. O. Bouchier relinquishes his commn. on ceasing to be empld., Dec. 9th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt.:—H. B. Davis, F. G. McIntosh (caused by wounds), H. Senior (contracted on active service), Dec. 18th.

Lt. D. O. Robinson relinquishes his commn., being physically unsuited for the duties of Pilot or Obsr., and is granted the hon. rank of Lt., Dec. 18th.

Sec. Lt. (Hon. Lt.) F. G. W. King relinquishes his commn on account of ill-health, and is granted the hon. rank of Lt., Dec. 18th.

Sec. Lt. L. C. Andrews relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec Lt., Dec. 18th.

The date of the appt. of Sec. Lt. (Hon. Lt.) L. F. Stevenson is Aug. 31st, and not as stated in "Gazette" Nov. 29th.

The number and Christian names of 260760 Flt. Cadet John Fletcher Dodd are as now described, and not as stated in "Gazette" of Dec. 10th.

The Christian names of 129648 Flt. Cadet Harry Milton Small are as now described, and not as stated in "Gazette" of Nov. 26th.

The Christian names of Flt. Cadet John Halpin Hall are as now described, and not as stated in "Gazette," Nov. 1st.

The Christian names of Flt. Cadet Charles Henry Hempel are as now described, and not as in "Gazette," Dec. 10th.

The names of 175376 Flt. Cadet Kenneth Campbell Watson Craig, are as now described, and not Kenneth Campbell Watson, as stated in "Gazette," Nov. 19th.

The initials of 117170 Flt Cadet D. M. Calder are as now described, and not as stated in "Gazette," Dec. 10th.

The notification in "Gazette," July 30th, concerning Flt. Cadet A. M. Harrison is cancelled.

The notification in "Gazette," Nov. 29th, concerning Flt. Cadet A. W. MacDonald is cancelled.

The notification in "Gazette," Dec. 10th, concerning Flt. Cadet T. Blatchford is cancelled.

The notification in "Gazette," Nov. 19th, concerning 128177 Flt. Cadet A. W. MacDonald is cancelled.

The notification in "Gazette," July 12th, concerning Lt. H. A. Edridge-Green is cancelled.

The notification in "Gazette," Nov. 1st, concerning Sec Lt. E. B. Henderson is cancelled.

The notification in "Gazette," Nov. 8th, concerning Sec. Lt. G. Davies is cancelled

The notification in "Gazette," Nov. 15th concerning Sec. Lt A. B. C. Emmett is cancelled

The notifications in "Gazette," Nov. 29th, concerning Sec Lts. M. de Verteuil and H. B. K. Trollope are cancelled.

Administrative Branch.—E. C. Mulgrove (Maj., R. War. R., S.R.) is granted a temp commn. as Maj. (Nov 15th, seny. April 1st, and to be actg. Lt. Col. whilst empld. as Lt.-Col.).

H. W. Stratton (Capt. and Qrmr. in Army) is granted a temp. commn. as Capt., Nov. 11th, seny. April 1st, and to be actg. Lt.-Col. whilst empld. as Lt.-Col

Lt. (actg. Capt.) P. Gurrey to be actg. Maj. whilst empld. as Maj., June 4th. (Substituted for notification on page 13218 of "Gazette," Nov. 8th.)

The following are granted temp. commns. as Capts., seny. April 1st:—F. W. A. Wells, M.C. (Maj., Ind. Army), and to be Hon. Maj., June 19th; C. G. Murray (temp. Capt., R. Marines), Dec. 1st.

Lts. to be actg. Capts. while empld as Capts.:—(Hon. Capt.) R. T. H. Watson, from (A.), Oct. 8th; G. Norrington, from (K.B.), Nov. 11th; N. A. Hardie, Nov. 26th.

A. B. Lanbridge is granted a temp. commn. as Sec. Lt., and to be actg. Capt while empld. as Capt., Nov 9th.

Lts. (A.) to be Lts.:—J. R. Verel, Sept. 1st; A. C. Simpson, Oct. 10th; L. B. Gately, Oct. 23rd; A. W. Whittle, Nov. 15th; P. G. Matthews, Nov. 16th; A. B. Monk, Nov. 29th.

Lts. (O.) to be Lts.:—C. E. Stewart, Sept. 18th; M. G. Sykes, Oct. 29th; H. A. Jones, M.C., Nov. 18th.

Lt. J. Duncan to be Lt., from (S.O.), Nov. 16th.

The following are granted temp. commns. as Lts., seny: April 1st:—T. Wire (temp. Lt., Lab. Corps), July 1st; E. A. Smirke, M.C. (Lt., Lanc. Fus., T.F.), Oct. 30th.

Sec. Lts (Hon. Lts.) to be actg. Lts. while empld. as Lts.:—S. F. R. Hulbert, H. L. Webley, Nov. 30th.

C. M. Collett is granted temp. commn. as Sec. Lt., Nov. 30th.

Sec. Lt. (Hon Lt.) W. Boning (Lt., Norf. R., T.F.) relinquishes his commn. on ceasing to be empld., Sept. 26th.

Lt. N. G. Boggon (Sec. Lt., Northd. Fus.) relinquishes his commn. on account of ill-health caused by wounds, Dec 18th.

The following Sec. Lts. relinquish their commns. on account of ill-health and are granted hon. rank of Sec Lt:—L. E. Hare, B. Soutten (caused by wounds), M. J. Watt (caused by wounds), Dec. 18th.

The name of Sec Lt Henry Charles Appleby is as now described, and not as in "Gazette," May 24th.

The surname of Sec. Lt (actg. Lt.) A. Tytler is as now described, and not Tyler, as stated in "Gazette," Nov. 19th.

The initials of Lt. S. R. Tipple are as now described, and not as stated in "Gazette," Nov. 22nd.

The notification on page 13922 of "Gazette," Nov. 26th, concerning Capt H. E. Earl is cancelled.

Technical Branch.—Maj. H. L. Templer is granted the actg. rank of Lt.-Col. while holding special appt under the Ministry of Munitions, Oct. 8th; Lt. (actg. Capt.) A. Hingston to be actg. Maj. whilst empld. as Maj., April 1st.

To be actg. Majs. whilst empld. as Majs (Gr. B.):—Lt. (actg. Capt.) G. L. Chater, Capt. W. H. J. Eldridge, Lt. (Hon. Capt.) P. S. Jackson-Taylor, Aug. 1st; Lt. H. Stansfield, from (O.), Nov. 2nd.

(Continued on page 2419.)

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NEW GERMAN AEROPLANES.

(With Some Comments by ERIK HILDESHEIM, Copenhagen.)

NOTE.—*As on previous occasions, the communication of the Danish correspondent of* THE AEROPLANE *is reprinted unedited as it offers a pleasing contrast to the ordinary serious technical descriptions which are more commonly to be read.*

Conditions are in a changing state in Germany. The following order has been issued :—

"The German Government advises the Soldiers' Council of the Flying Troops to transform the organisations of the aviation service for war aims into a peace section under the name of German Air Department.

"It will be the task of the latter to place itself at the service of the people in the lines of activities of trade, traffic, mail, foodstuff transport and guard duty.

"The address is: German Air Department, Charlottenburg, Suarez Street, 31. Telephone Wilhelm 7230.

"The Soldiers' Council of the Flying Troops. Signed Klapper. Pirner. Hildebrand. On behalf of the German Government—Göhre."

PREPARING FOR PEACE.

The German aero weekly journal "Luftwaffe" ("Air Weapon") has let its sub-headline "Luftpost" ("Aerial Mail") grow in typing almost to the size of the former title, to be likely one instance more to record of the stepping stone of the German development going on, while the former weekly report of the aerial war activities by the Captain out of service (retired :—Ed.) Otto Lehmann, as per German view, appears now as the aerial mail record.

The same author has written the editorial comment of the last issue, which must have been published earlier, as it appears abroad on 24th November, this being indicated as the date of publication. As the article should fairly express present German hopes and aims of aviation in the coming days, it is translated contracted for the future, to turn them into facts or Utopia. The words read as follows.—

"The German air weapon leaves the theatre of war unvanquished, lowers the war colours as weapon, to run the peace flag up now, placing itself at the service of the peaceful competition of the nations. The aeroplane has regularly and safely carried out large bomb raids by day and night, reached the end in crossing the sea that separated the nations, and such an outcome of human enterprize will be the master of the future, without question.

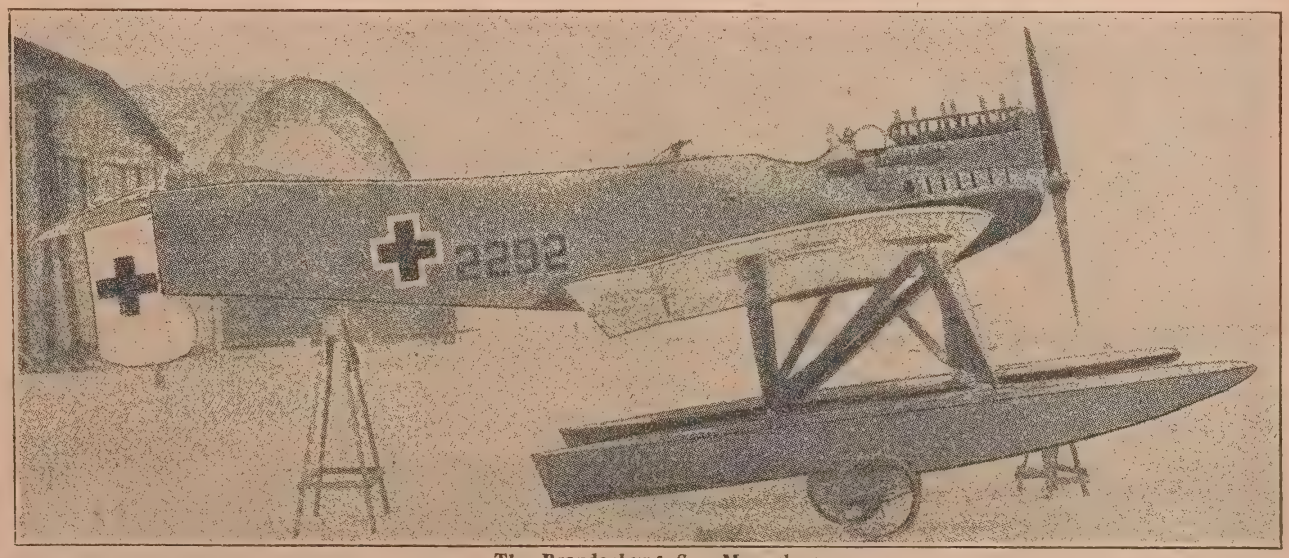
"The foundation is there: an unprecedented capacity of all adjoining industries that are capable of much greater performances, when they shall no more be cut off from the whole rest of the world. Further, the industrial and technical experiences of four long years of war must be emphasised, to which the practical performances of the aviators must finally be added.

"The aeroplane is the international connection over seas and countries. When every other means of transport fails the aviator is the emergency help. Aeroplanes started again the interrupted connection of Berlin with the coastal cities, Foch sent the conditions for armistice by aircraft to Hindenburg.

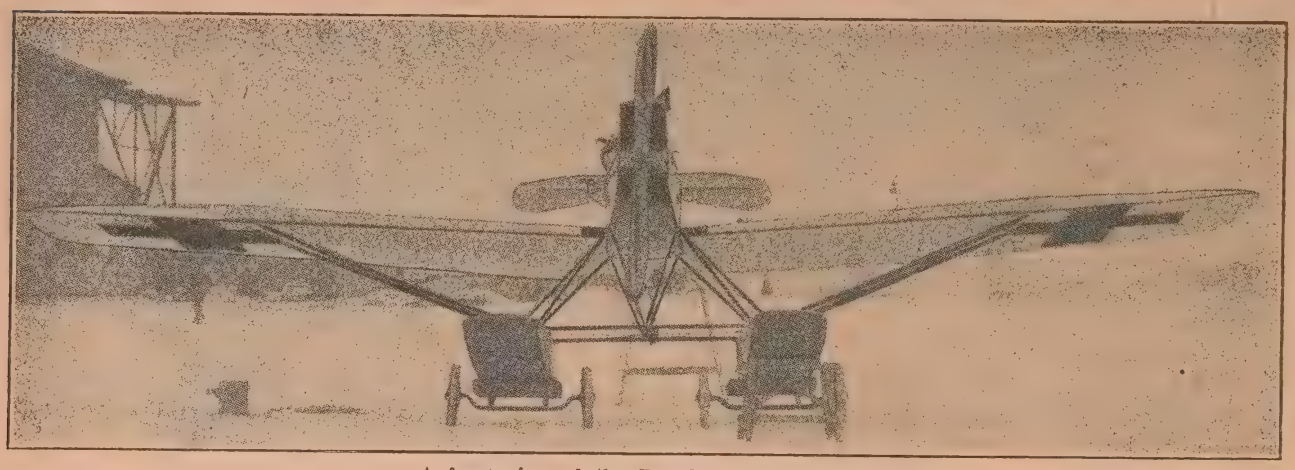
SERIOUS TRANSPORT.

"Berlin's milk supply grows more scarce every one of these anxious days; children and sick persons must positively die. Aviators, come to the assistance! Dispatch observators on light scouts cover the country that supplies Berlin with milk to advise the farmers where to send their filled milk pails. Then send fifty machines out, if you care, to carry instead of machine-guns, cartridges and bombs, two tons of milk for the sick and children, who will be grateful to you. Such a service is easily organised; I am the first one to work it. Be the idea of the flying milkman comical, it is still, and mainly, benevolent. Old conditions overturn, times change, new life flourishes on the ruins.

"Aviators, to the assistance! Nothing must lie fallow. The new air traffic will have curious starts; all hints, efforts, wishes, wills, and thoughts must be concentrated in the air department. According to the wish of the enemy we handed 2,000 aeroplanes of Fokker single-seater fighters and twin-engines of the former bomb-dropping squadrons over to him, but have still the speedy, single-engined series aeroplanes of good load-carrying capacity and the giant aircraft left.



The Brandenburg Sea Monoplane.



A front view of the Brandenburg Sea Monoplane.

"Air traffic will make an easy start, born in time of need with the highest performance of the railway, by the troop transport of the demobilising, and by the aliment supplies.

"Every reader knows that the private express trains have completely stopped; only few passenger trains traffic amongst the goods trains, so transport is slow. Therefore it will easily be understood that the authorities make in case of hurry use of the war aeroplanes for general purposes, as when for instance a well-known naval pilot flew last week with several million cash from Berlin to Kiel, where the money was urgently required for payment of the sailors.

World Competition.

"Alone the already attained speed of 350 kilometers (?!) will revolutionize everything. The air will be divided between the nations according to the performance of each competitor. He, who has no performance to show, will in the pitiless trade war be left aside unconsidered, may then assume a position again, when he has learnt once more. But we can refer to performances that are untouched by the others in spite of their large raw materials markets. So continue work promptly!

"These lines are only to be indicating, the example of the milk supply of Berlin was but one idea just occurring to the mind. Nor the airship of 15-20 tons load carrying capacity must be forgotten. Premium? By God, the pupil pays costs every where. German Nation, notify your air will by immediate doings!"

The mind rises almost by itself to compare above lines with the recent Russian aerial peace article on page 501, issue of The Aeroplane of August 7th.

Notes on New Types.

The new Armistice conditions prevailing put themselves further forward by allowing illustrations of a number of the later and experimental German aircraft to be published. As they are however accompanied by no informative text, the neutral contributor must drop his usual "Anglo-Dane" translating service, to give from his study of aviation from its infancy, through peace and war years, such comments as the pictures lend themselves to.

It is not the least interesting about the views that they present the latest German efforts in the extremes of war aviation development, viz. scouts and giants.

The Brandenburg Sea Monoplane.

The Brandenburgische and F.F. (Flugzeugbau Friedrichshafen. aeroplane branch of the Zeppelin Co.) firms have always been the chief contractors to the German Navy for seaplanes, formerly of the general tractor type. The later Brandenburg seaplane to land in a Danish harbour, as illustrated, bore evidence of the development in the German seaplane line, and the sea monoplane, dealt with here. It is the last word in German naval war aviation.

This craft was known for some time to be in existence and at the disposal of Captain Lieut. Christiansen, for North Sea service of the Zeebrugge squadron under his command. It is easily seen that the object strived at has been to obtain a seaplane mount approaching land scouts in controllability, which end, however, renders the aircraft apparently difficult to handle, and thus confines its pilotage to skilled hands.

A comparison shows the biplane and monoplane seaplanes to have the fuselage with the features of raised body curve and tail plane fixing, and rudder form and the floats-cum-strut chassis as identical components. Too, the lower planes of the biplane appear to be in the same position as the wings of the monoplane with its aileron and exterior control cables, and the lower wing strut support of the monoplane is another instance proving the requirement of skilled handling not to have plane damage as the result of a hard descent.

An excellent view and fire range of both pilot and observer will clearly be seen to be attained, besides a live craft, and the weight of the floats may to some extent bring the centre of pressure in approach of the point of gravity.



A Giant Sea Monoplane.

The news of the other sea monoplane must be left to what a study of the illustration reveals, which naturally does not go into details. The body looks of Morane monoplane familiarity, with Handley Page tail and fashion, or Hanoveraner fixed twin plane for German comparison. The single planes are provided with ailerons, of which the peculiarly formed control levers catch at once the eye. Two floats appear to be provided, or might better be termed boats, as they seem to offer some seating accommodation for the crew. The design looks like including two nacelles with



The Staaken Giant Biplane.

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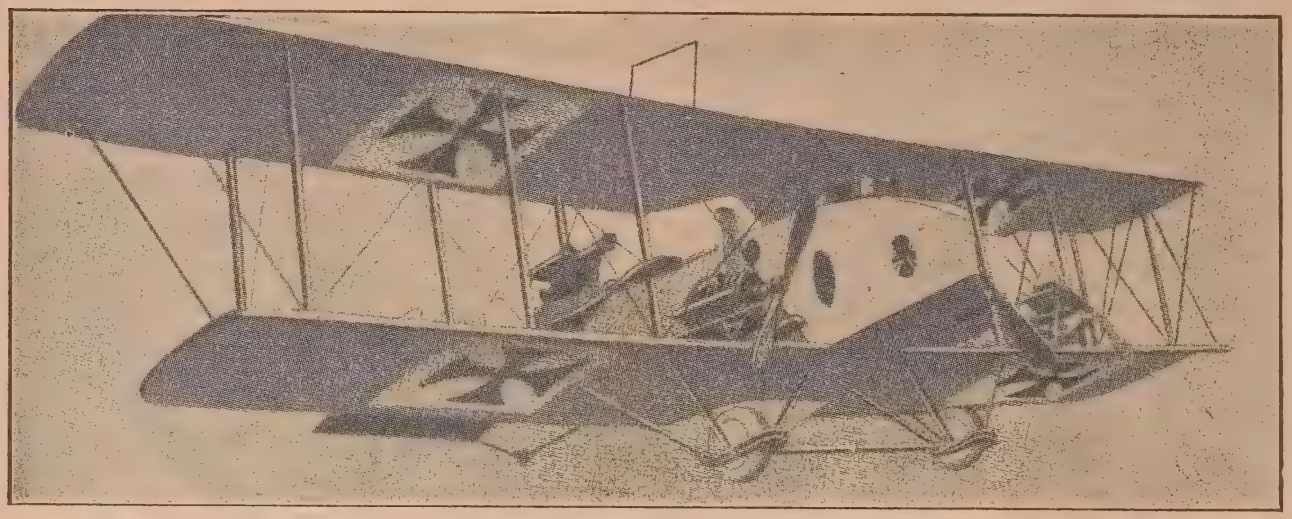
"No greater part has been played than by the Bristol Fighter—a two-seater machine, more deadly in combat than the Fokkers were to our pilots in the early days of improvised machines . . . .

"With a 250 h.p. 12 cylinder **Rolls-Royce** engine it can climb to over 20,000 ft. At 6,000 ft. its speed is 120 miles per hour, which only decreases to 113 at 10,000 ft. The rate of climb—a great factor in aerial fighting—at that height is 640 ft. per minute and it can rise from the ground at almost double that rate for several hundreds of feet."

"The Weekly Dispatch," Nov. 24th. 1918.

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An early type of Siemens-Schuckert Giant Aeroplane.

twin propeller drive, but the illustration leaves uncertainty as to the power plant installation.

GERMAN GIANT AIRCRAFT.

Staaken, Siemens-Steffen, and Linke-Hoffmann Types.

Recent advertisements in German aero journals of "Situations Vacant or Wanted" for, and of aviators, have in the information of the pilot's usefulness included pilotage of R aircraft. With reference to the nomenclature article in The Aeroplane (13th March, page 999) of the A, B, C and on lettering of German aircraft it may in continuation of the coincidence of D, E and G classes with Doppeldecker (biplane), Eindecker (monoplane) and Grossflugzeuge (large aircraft, corresponding with the specification: twin-engined bombers) be mentioned that R is the initial of Riesenflugzeug (giant aeroplane).

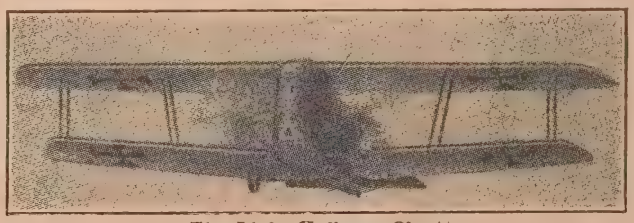
In this class of German war aviation that may be considered experimental, as none of the types appear to have appeared at the theatre of war in quantities so as to offer the opponent a chance of capturing specimens to describe and comment on, first attention may be given to the Staaken biplane for same reason as above in the case of the Brandenburg sea monoplane—namely, that its existence has been known for some time, and chiefly since the fatal accident, which cost the lives of the well-known old-time pilot Vollmöller and Director Klein, who, too, must have been a power, according to the obituary note of Bosch.

The Staaken three-engined tractor-cum-pusher giant biplane may somewhat vaguely be characterised as an opposite edition of the early twin-body-cum-nacelle pusher Caproni aircraft with its single fuselage, with engine, radiator of the old type, vulnerably exposed to gunfire, and airscrew in front, and with two nacelles with pusher power plant installation mounted between the planes, the seating accommodation for gunners having had its first public appearance in an experimental Sturtevant biplane. The tail arrangement resembles the model, set first by the Handley Page.

The works for the Staaken giant aircraft experimental work are in Spandau, by Berlin. As the gunners appear to be mariners, the work may be assumed to be carried out for the Navy; the nacelles of the gunners are mounted in inverted Vs with landing gears below, consisting of two single Vs, in which a shaft with twin tyres mounted on rest. A further landing gear is provided below the fuselage nose, in the way known from the experimental Albatros twin-engined bomber, illustrated on page 1275, The Aeroplane, October 8th.

One illustration is published in "Luftwaffe" of another, unnamed, German giant biplane. The latter has a four-screw drive: two tractor screws, mounted somewhat below the level of the upper planes on fairly inclined cabane struts, while two propellers are mounted in same proportion above the lower planes, an arrangement with the obvious object of preventing the screws from disturbing the air for the propellers to work in.

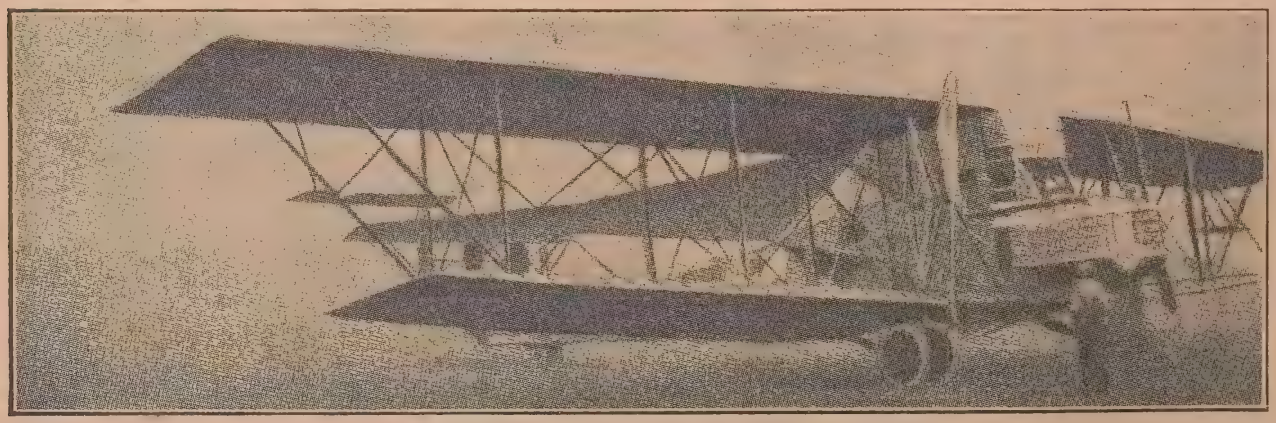
All four are driven either by cable or by chain, running in tubes, but the single fuselage encloses the power plant; so it is not revealed whether it is a multiple engine installation. A car-type radiator forms apparently the nose of the body, and the four squares after the windshield of the front cockpit may be other radiators. The balanced elevators of both fixed tail planes are distinctive. The landing gear works out as two sets of double shafts, with twin tyres, resting in four single, outward inclined struts. (See photograph on page 2388.)



The Linke-Hoffman Giant.

The Siemens-Schuckert and Siemens-Steffen Giants.

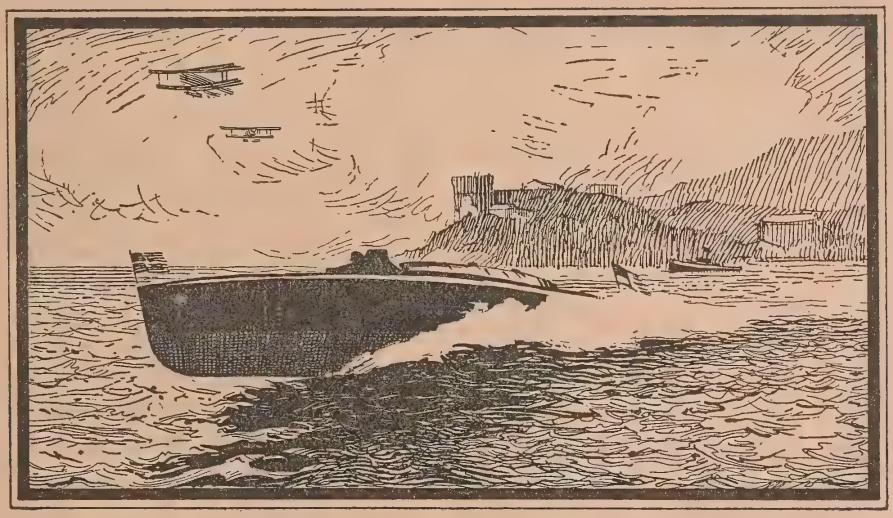
The efforts of the Siemens-Schuckert Company, confined, like the aircraft branch of its great competitor the A.E.G. concern, apparently to military requirements with a determination of staying with the aircraft department in the business line by catering for the requirements of commercial aviation to come, appear in two editions resulting, both of which appear more workmanlike than the Staaken biplane, which is to the air traffic aeroplane as the pre-war Sikorsky was to the Handley Page.



An early type of Siemens-Steffen Giant Aeroplane.

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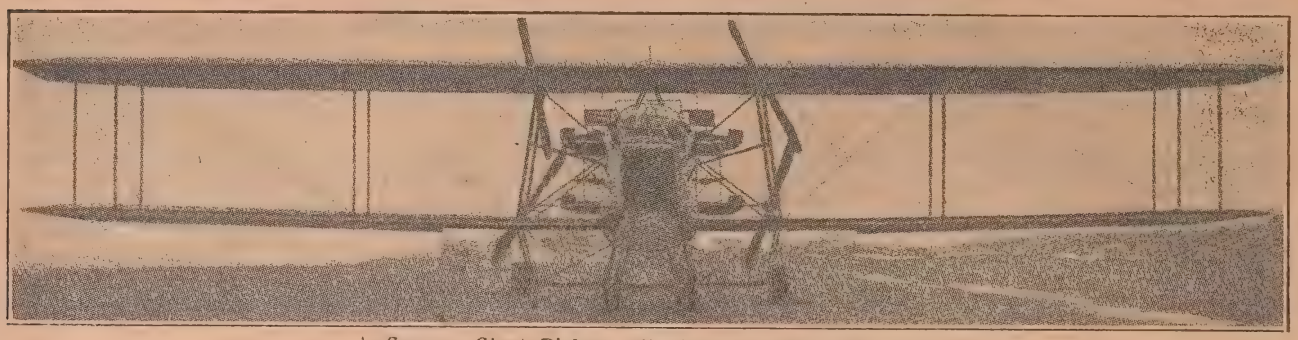
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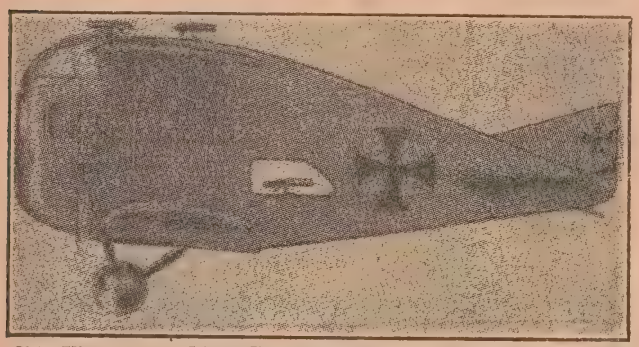
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A German Giant Biplane with indirectly driven airscrews.

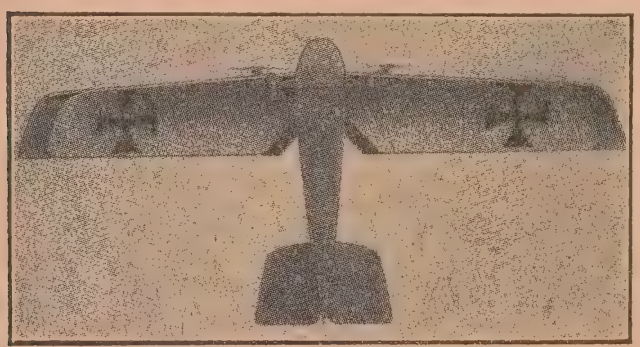
The one Siemens-Schuckert giant illustration looks as having suffered from the retoucher's hand. Judging from the right side of the view, the aircraft appears to be equipped with four engines, two motors, apparently of V types, may be Körting model, driving tractor screws to each side. Though the motor mounting is not visible, one motor looks as if installed on the fuselage with the screw in an impossible position for revolving. The skid rudiments act likely as mudguards and so as to prevent the wheels of the weighty aircraft to sink in muddy ground.



Side View of the Linke Hoffmann Giant, aptly called the "Walfisch," or "Whale."

The name of Steffen combined with Siemens in the other product may be that of the flying officer, known as a pre-war daring lieutenant-pilot. The idea of the designers with the split body relates undoubtedly to stability; the other feature is the nose stepping, looking almost too prominent to be radiators, so one may have a guess at some blinding armourment for engine or engines and crew. The nearest struts to the body are carried out as double V rests for the shafts of the two screws, being driven by transmission from inside the fuselage. The landing gear is like those found by the various models in the German G class.

A further feature is the appendicitis (presumably Mr. Hildesheim means "attachment") combined with two struts to the ailerons and recalling the Curtiss interplane ailerons from the days of the Wright patent flights.



Underneath View of the L.H.W. Giant.

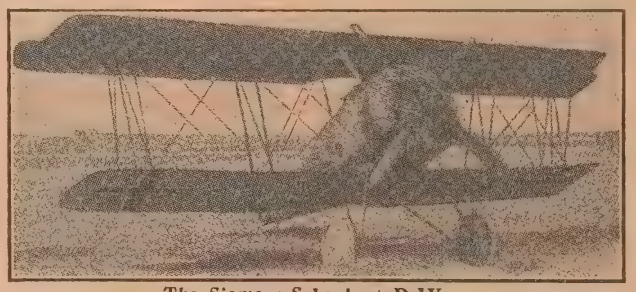
The L.H.W. Giant, Linke-Hoffmann Works.

Still, though the Siemens-Schuckert aircraft branch was a war-time new-comer to the trade, both a Nieuport copy and a G class biplane at any rate were known to their credit, but the L.H.W. giant is the first news of the existence of the Linke-Hoffmann works at Breslau. This biplane is pronounced of "whale" type, the one to come during the war, and perhaps more typical German than the "dove" and "arrow" ones. Was it not for the views of the aircraft in flight having a trustworthy look, one would take the side view for the designer's plan on paper, and not illustrating a real product. As this aircraft will be seen to be of the totally enclosed type, the illustrations render no information of the detail work beyond showing a twin tractor screw drive by transmission from the fuselage, and the position of the two guns on top of body and one with fire-range cutting aft the planes. To reduce the number of interplane struts to a limit the inner set are of somewhat outward inclination of Brandenburg aircraft fashion. The form of the iron cross on all the giant biplanes indicate them to have been built at any rate before the new iron cross type came into employment last spring

RECENT GERMAN SCOUT AIRCRAFT.

The large number of German experimental giant aircraft described in the previous pages can be supplemented by notes and illustrations of German scout aeroplanes from the following issue of "Luftpost"

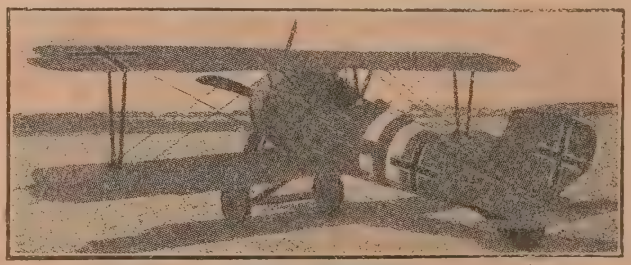
As long as there is such hindered admittance to all sources for studying the aerial events and developments of the four years of war, comments cannot claim, nor expect to be, fully exhaustive. The British are given the credit of setting the scout and twin-engine bomber fashion with the makes, Sopwith, Bristol, and Handley Page; the French of being first out with



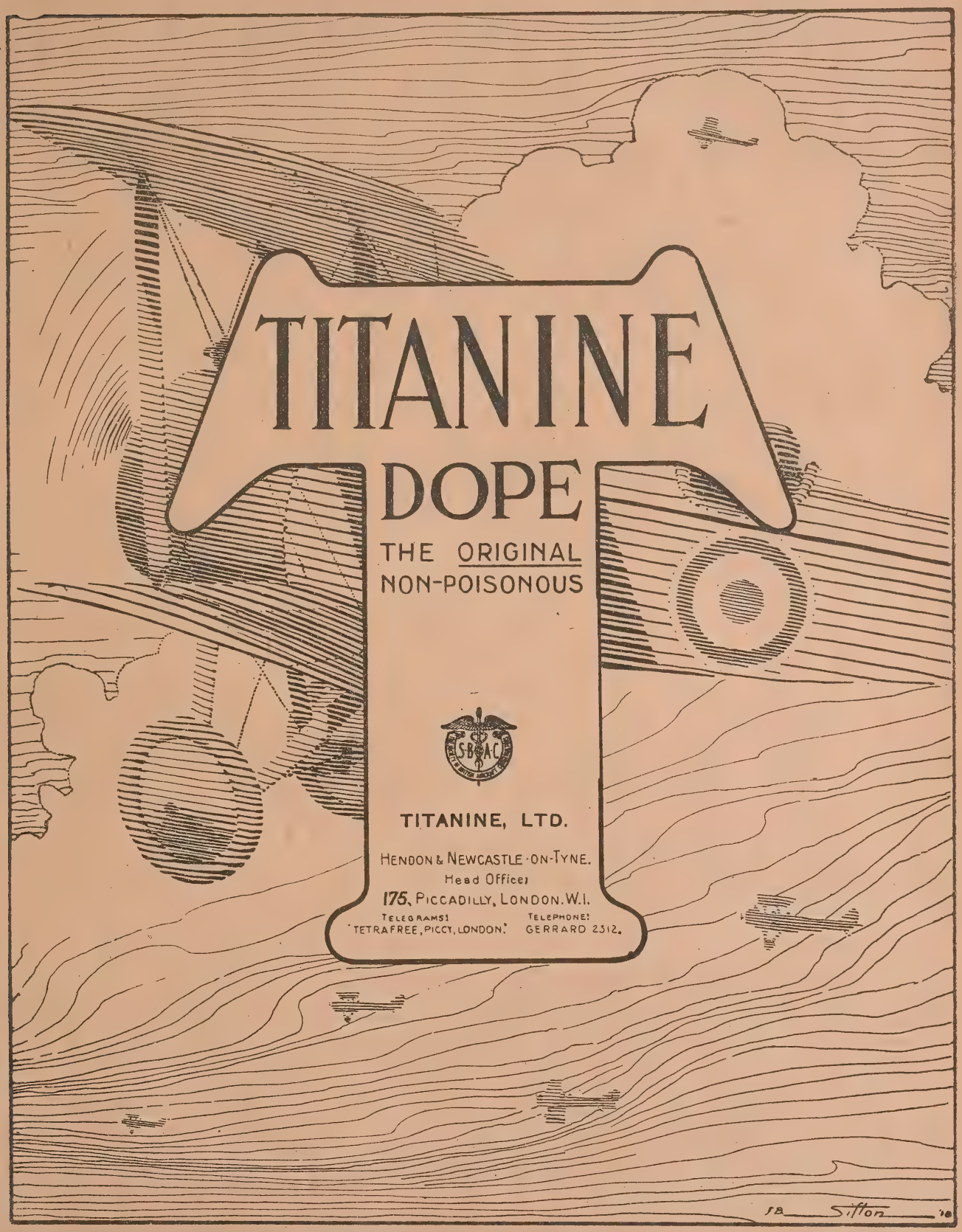
The Siemens-Schuckert D.IV.

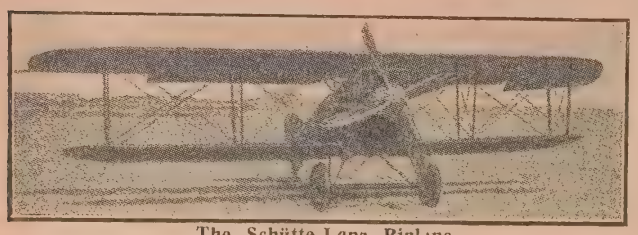
a twin-engined battle-plane, the Caudron, and also early excellent aircraft, such as the Nieuport and Spad scouts, all of which are stated to be tricky aircraft to fly, and needing skilled pilots, thus repeating the infancy period of French aviation. Then followed the German period of German thorough military work, starting before and ending with the war, in which the German strong point has been priority in organisation, as demonstrated in the running of the fighting and bombing squadrons. All of us are now at the third stage of aviation in our outlook for commercial flying possibilities.

Reference has been made to the fact that all of the German giants were, judging from the Iron Cross, if from no other sign, not from the last period of the war, and none of them had so far proved the possession of good qualities for war work by appearance at the front in quantities, or enemy captures and comments would likely have been received. Wherefore it may first be pointed out that those German scouts, dealt with to-day, by the form of the Iron Cross are indicated as fairly late German efforts. To deal first with the absolute new-comers, prime attention may be paid to the Siemens-Schuckert biplanes.



Rear View of Siemens-Schuckert of another Type.

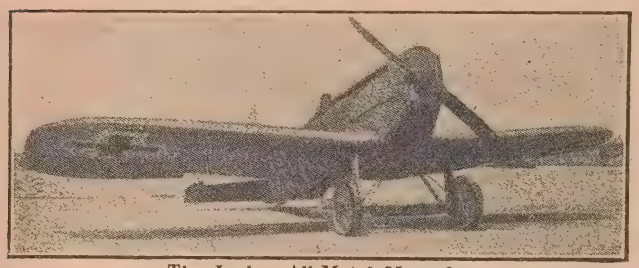

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The Schütte-Lanz Biplane.

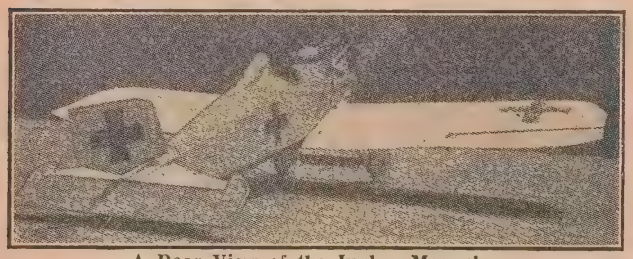
The Siemens-Schuckert Biplanes.

To judge from general appearance, the D4 model looks the older, with its numerous interplane cross wiring. The form of the cabane struts here and of the interplane ones of the other scout edition are similar to the familiar construction from the Pfalz biplane. So far as can be seen, both Siemens biplanes are provided with balanced ailerons at both planes, as well as with balanced rudders and elevators. The D4 machine is equipped with a four-bladed screw, being, in fact, the result of an attachment of two, and rotary motors being employed the



The Junker All-Metal Monoplane.

broad form from the body nose is given, the other model looking, with its monocoque fuselage and striking streamlining aft the pilot's head, altogether the more finished. In this connection due attention may be paid to the news with the book on rotary aero engines of this Swedish aircraft manufacturer, Dr. Thulin, as source that the associated Siemens and Halske concerns have for some time manufactured a rotary motor with cylinder and crankshaft rotating in opposite directions, with the same r.p.m. of 900. The airscrew is mounted on the crankshaft, and the advantage to be obtained is that the screw gives by a fairly low number of revolutions a better effect without the employment of reduction gear, all while the chargings and accordingly the power development is the effect of the relative low

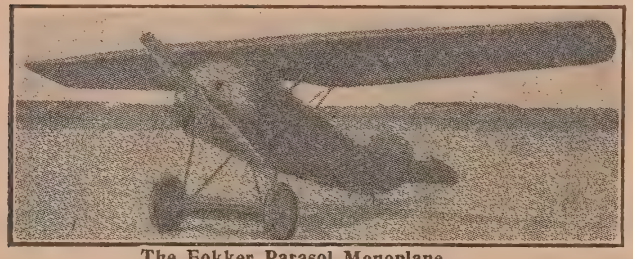


A Rear View of the Junker Monoplane.

number of revolutions. Yet at the same time the low number of r.p.m. has a bad influence on the air-cooling of the motor.

The Schütte-Lanz Scout.

Though M. Lagorgette pays attention to the activities change of the Zeppelin company from the airship line to giant aeroplanes, this biplane of scout aspect is the first effort known of in the aeroplane line of the Schütte-Lanz airship firm. Perhaps it is no chance that the first German aeroplane provided with a real, encowled, four-bladed airscrew has been turned out by airship manufacturers. The scout is stated to be equipped with a 160 h.p. Mercédès motor, and appears to be provided with a balanced rudder, attached to a fin, extending to the tail skid, with balanced ailerons at the top planes only, and with a large square front radiator, looking of bad influence.



The Fokker Parasol Monoplane.



The L.V.G. D.V.

The Junker All-Metal (Aluminium) Monoplane.

The same comments, as applied to the Brandenburg sea monoplane scout, may be employed on this monoplane version of the foregoing biplane of the Junker company, the more, as in this instance there are no heavy floats to bring the point of gravity within approach of the centre of pressure. The body is of monocoque appearance with pronounced streamlining behind the pilots and looks as are the planes, provided with large trailing curved ailerons, the divided triangular tail fin and the undivided balanced elevator to be made of corrugated aluminium.

The fuselage ends with a point of sheet metal, and the rudder, of sharp-cornered shape, is attached unsupported to the stern post. What looks like a wire post is to be seen on top of the right plane, but not on the left. A car type radiator is employed, as is a stationary engine and an old-time backwards led exhaust pipe collector. Besides the usual V-shaft rest, the landing gear comprises a forward converted, narrow and streamlined V strut set and two inclined ones of circular tubes, meeting in the middle below the fuselage.

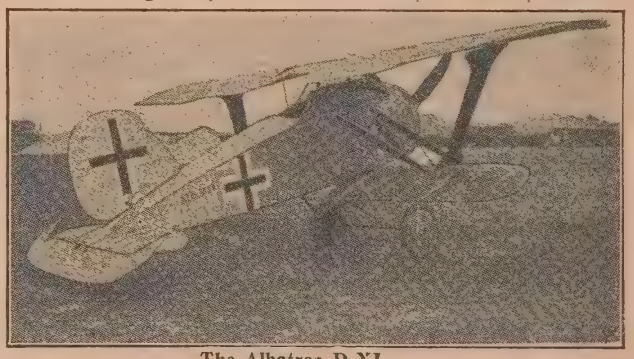
The Fokker Parasol Monoplane.

This aircraft is stated to be powered by a 110 h.p. and rotary motor, and appears to include the usual Fokker components, like landing gear, body, rudder of comma shape, tail plane and balanced elevator, as known from the Fokker triplane and biplane editions. Both the absence of any wiring and the thickness of the undivided parasol plane induces together with the known business connections of the Fokker aircraft concern and the Junker's newcomer one the impression that the plane of this Fokker parasol monoplane has been made of metal.

The L.V.G. Type and Albatros D.XI Scouts.

In turning out these two scouts the designers of the two well-known German aircraft manufacturing companies seem to have been influenced by same ideas, so that it is justified to comment upon them in joint.

In both cases the single streamlined and outwards inclined strut idea has been carried out with the clear object of minimum limiting the interplane connection head resistance, and in conjunction with the inclined struts from the interplane strut bottom joint to the upper fuselage longitudinals doing altogether away with wiring. The Albatros strut form was first seen of by the fashion of the 1916-17 L.F.G. Roland whale effort, while the two inwards inclined struts appear to be of usual drop shape. In the L.V.G. the streamlining comprises both the interplane and plane cum

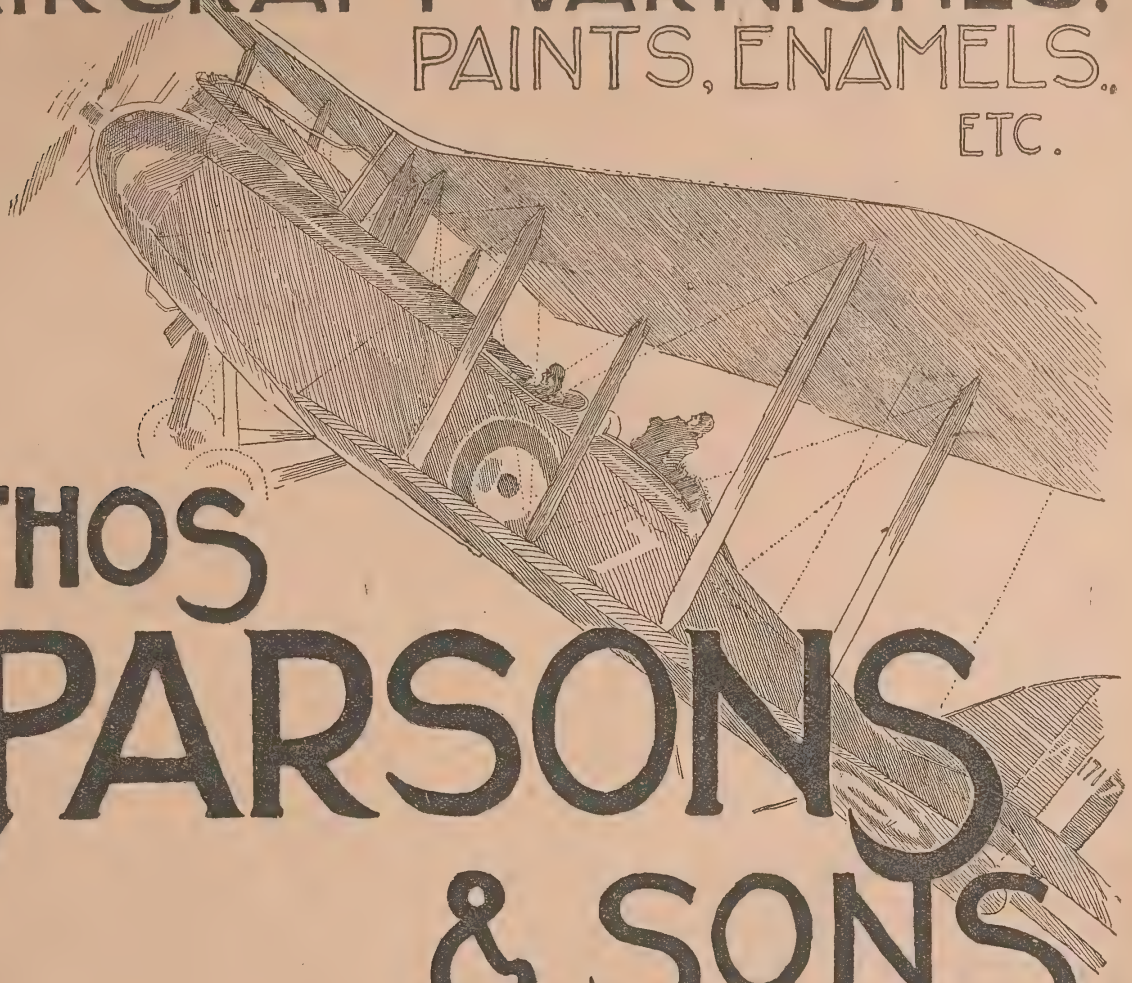


The Albatros D.XI.

fuselage connecting twin struts, of more or less V structure. The inner set is provided with a round cutting in the streamlining.

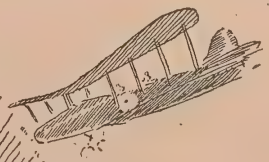
The body nose and the fairly forward position of the Albatros gives the impression of a rotary engine installation, while on the other hand the deepness, though not markedly whale type, camouflaged, body of the L.V.G. may be the result of and tell the employment of a powerful stationary motor. The chord of the lower plane of the L.V.G. looks large for a scout; the rudders of both aircraft ask for comment. Considering the large impulses on a scout rudder from hard work the unsupported position seems daring by the L.V.G., while one fails to see immediately the object of advancing the fin and balanced rudder on the Albatros. The tail fin and undivided balanced elevator of the latter is similar to the one of the biplane scout of the same firm, while the hinged fixed plane and elevator position of the L.V.G. scout is that of the Brandenburg seaplane fashion.

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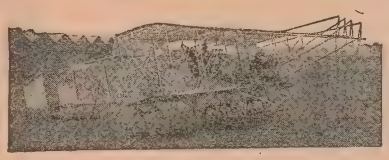
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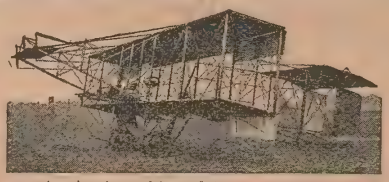
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The first Grahame-White biplane. The "Baby," built in 1910.



The first Grahame-White monoplane, built and flown early in 1911.



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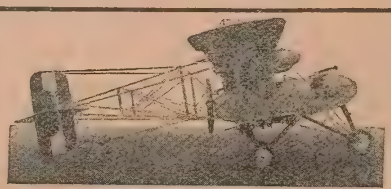
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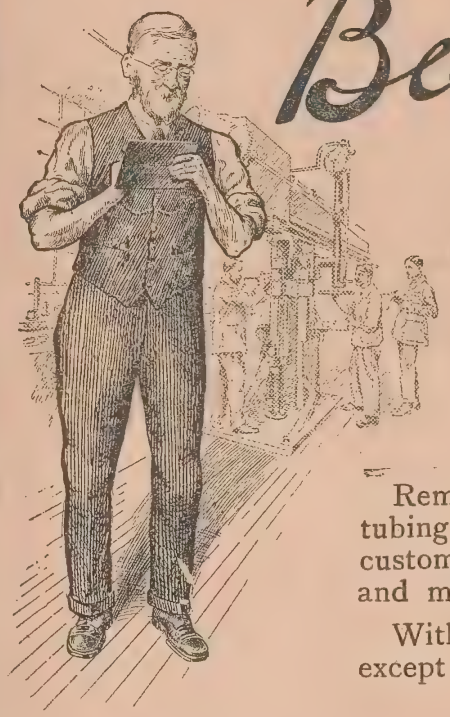
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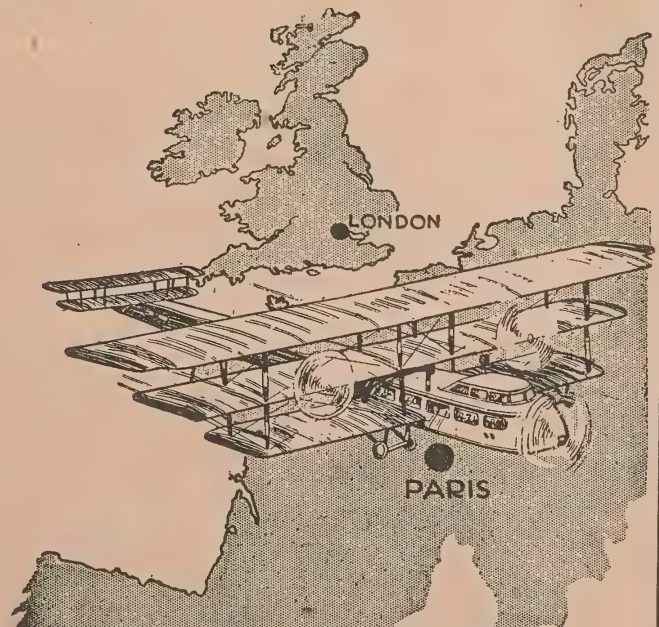
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Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1, and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing. "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemalvo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry. "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading.

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames. "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Aviprop, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521.
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Tottenham Street, Tooting, S.W.17. Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. Yeovil 129.

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth.

Radiators—
Letchworth 26.
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 766.

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semloh, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Invertors, Redditch." Redditch 74.

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay, 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester. "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
Willesden 2480.
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
Rubery Owen & Co., Darlaston, South
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

BUYERS' GUIDE cont. on next page.

"The Aeroplane" Buyers' Guide.—*continued.*

Sheet Metal Work (continued)

Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Solder Manufacturers—

Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6342.

Sparking Plugs—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Lodge Sparking Plug Co, Ltd, Rugby. "Igniter, Rugby." Rugby 235.

Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of KLG Plugs. "Kaelgee, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 122.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3217.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—

Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13

Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310

Turnbuckles—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Rubery Owen & Co., Darlaston, South Staffs.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines)

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Thomas Parsons & Sons, 315 and 317, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield" Attercliffe 95.

Washers—

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Avenue 1432. Redditch 61

Watchmakers and Jewellers—

(Silver Models)—

Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 9091 (3 lines)

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic London" Vic 4830

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—

Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—

Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

Terry, Herbert, & Sons Ltd., Redditch "Springs, Redditch." Redditch 61.

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467

Sagar, J., & Co., Ltd., Halifax "Sawtooth, Halifax." Halifax 136.

Wadkin & Co., Leicester "Woodworker, Leicester." Leicester 3614.



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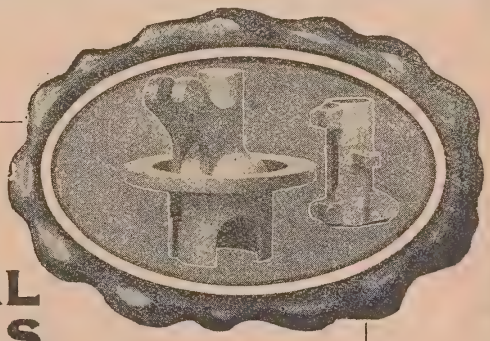
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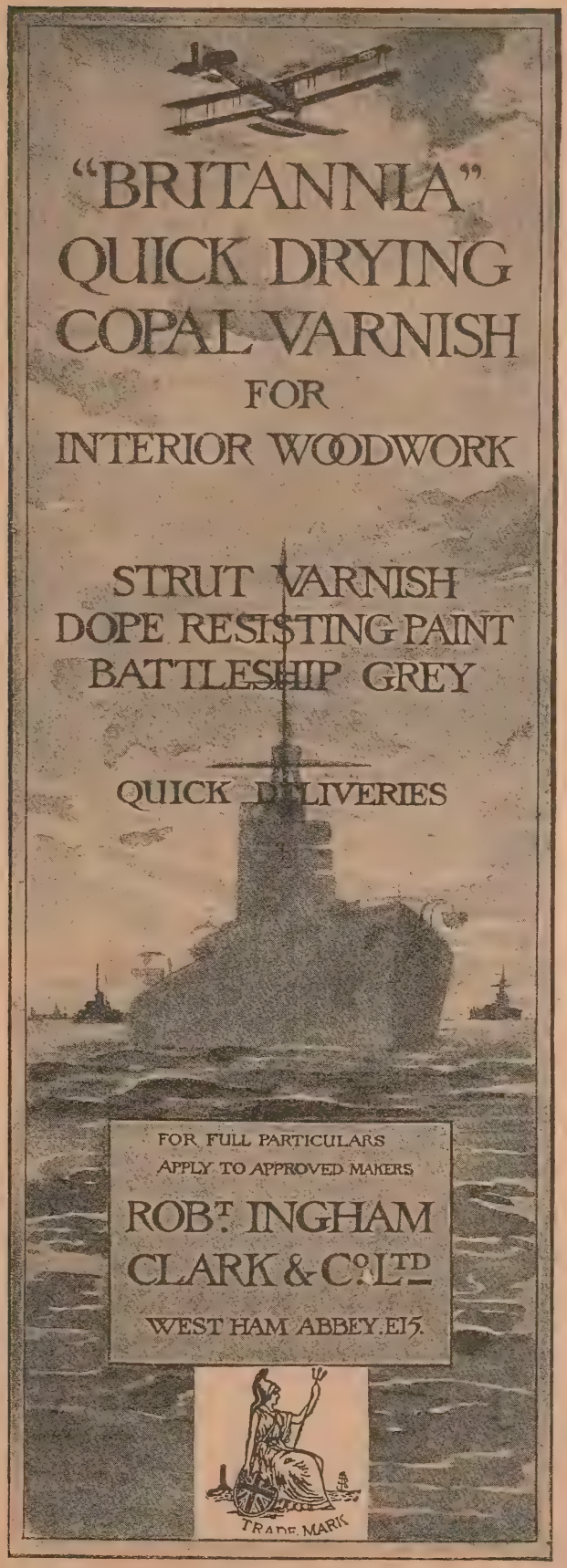
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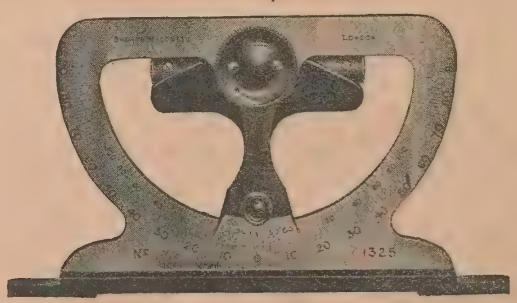
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THE PATENTS INDEX.

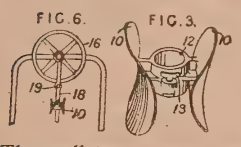
The subjoined list of recent inventions has been specially compiled by THE AEROPLANE from the current Official Patents Records :—

PATENTS APPLICATIONS.

Suffit, R.-Courtois. Aerial machines. No. 19986. Dec. 3rd.
Angus, T. C. Aircraft compass course and speed finding protractor, compass, etc. No. 20549. Dec. 10th.
Beasley, W. E. Wheels for vehicles, aeroplanes, etc. No. 20827. Dec. 13th.
Binding, A. O. Carburetters for airship engines. No. 20906. Dec. 14th.
Blackburn, H. Parachutes. No. 20612. Dec. 11th.
Cutter, T. Air propeller openings. No. 20403. Dec. 9th.
Ingram, E. Silencing aircraft. No. 20770. Dec. 13th.
Leitner, H. Metal propellers for aircraft. No. 20766. Dec. 13th.
McCallum, K. C. Floating aerodrome or landing station for aircraft. No. 20661. Dec. 11th.
Marsden, C. C. Construction of aneroid barometers or alimeters. No. 20403. Dec. 9th.
Milton, F. R. G. Means for controlling aeroplanes. No. 20887. Dec. 14th.
Mooney, D. J. Metal construction for aircraft. No. 20807. Dec. 14th.
Pascal, G. H. Compensating sight for aeroplane front guns. No. 20424. Dec. 9th.
Pilichowski, L. Planes of aeroplanes. No. 20751. Dec. 13th.
Ridgway, A. E. Weight-supporting parachutes. No. 20526. Dec. 10th.
Ridgway, A. E. Parachutes and cases therefor. No. 20527. Dec. 10th.
Saunders, S. E. Aircraft. No. 20643. Dec. 11th.
Stead, A. H. Locking device for controls of aircraft No. 20885. Dec. 14th.
Tarrant, W. G. Construction of light spars, beams, etc., for aircraft. No. 20624. Dec. 11th.
Thomas, G. H. Means for starting engines of aeroplanes. No. 20428. Dec. 9th.
Thomas, G. H. Means for starting engines of aeroplanes. No. 20711. Dec. 12th.
Walster, J. Starting internal-combustion engines on motor vehicles, aeroplanes, and airships. No. 20421. Dec. 9th.
Wheelwright, J. S. Speed indicator for aircraft. No. 20689. Dec. 12th.
Woodward, J. W. W. Aeroplane toy. No. 20883. Dec. 14th.

ABRIDGMENTS OF RECENTLY PUBLISHED SPECIFICATIONS.

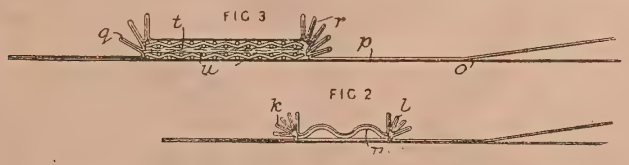
119,856. Aeronautics. WARNER, W. D., 8, East Broad Street, Columbus, Ohio, U.S.A. Aug. 12th, 1918, No. 13074. Convention date, Oct. 4th, 1917. Not yet accepted. Abridged as open to inspection under Sect. 91 of the Act.



STEERING AND BALANCING.—The usual control lever of an aeroplane or other apparatus is fitted with a pair of pallets 10 adapted to be gripped between the knees of the pilot to enable him to control the machine while having his hands free. The pallets 10 are corrugated on their outer surface and are mounted on a sleeve 12 provided with an inclined clamping screw 13 so that the device may be secured to the control lever in any position. Fig. 6 shows the device applied to a wheel.

119,709. Protecting windows, etc., during gun-fire, etc. TAYLOR, J. E., 296, High Holborn, London.

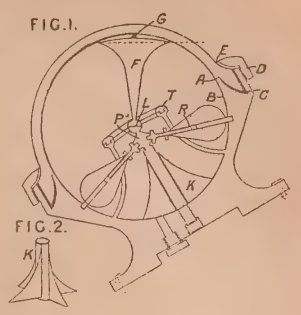
Strips of paper, parchment, fabric, or other material, used for protecting windows during gun-fire, the discharge of bombs, and



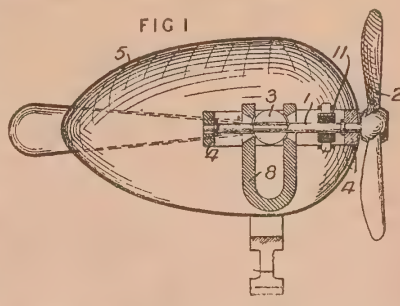
the like, are provided with damping-devices situated at the points of maximum amplitude of vibration. The damping-devices consist either of pieces of corrugated material *n* secured between two strips of paper or the like, the upper of which is provided with pleats *k*, *l* on each side of the corrugated material, or of a pad of absorbent cotton or the like between two pieces *t*, *u* of canvas which is secured between two strips *o*, *p* of paper or the like, the upper strip *p* having an opening above the pad and pleats *q*, *r* on each side of it. The strips may bear advertisements or some form of decoration, and may be made in lengths or as a continuous strip.

119,364. Levels and clinometers. TAYLOR, W., 21, Tweed Street, Berwick-on-Tweed.

A level for aircraft comprises a spherical vessel containing liquid and a pivoted buoyant indicator. The vessel is composed of a glass or other transparent hemisphere A bearing lines indicating the left, right, front, and rear, and also the degrees of tilt, and a hemispherical base B of aluminium or other metal, the two parts being secured together by cement C and a threaded locking ring D bearing on a washer E. The indicator F is hollow, has a dome-shaped top bearing a black or coloured central projection G, and is mounted by a ball-and-socket joint L on a member P. The member P is carried by a shaft screwed through the base of the level and by stays R by which it may be adjusted so that the joint L is in the centre of the sphere. Four-bladed resistances K, Fig. 2, to prevent motions in the liquid, may be provided on the shaft supporting the member P and on the stays R. A ring-shaped cushion T of rubber may be provided to prevent damage to the indicator when the aircraft turns over, etc. The level may be secured to a tilting table on the aircraft which may be adjusted so that the level is accurately placed with respect to the aircraft. Reference is made to Specification 116,166.



119,380. Velocity meters. SCHOUTE, C., de Bilt, Utrecht, HEYST, F. A. VAN, Soesterberg, and MEYER, N. E. G., Bosch en Duin, Zeist, all in Holland.



In apparatus for determining vertical velocities in or of air or water, specially applicable to aircraft and submarines navigated in a horizontally moving medium, a shaft 1, rotating in a framing 4, 5, pivoted on the body of the craft, carries a propeller 2 and an armature 3 rotating between the poles of a magnet 8 pivoted always to remain vertical under gravity or other action. The current produced in the armature 3 is taken off from the commutator 11 and varies with the speed of the propeller and with the line of the angle of inclination in the medium and thus provides a measure of the vertical velocity. The armature 3 may be driven indirectly by the shaft 1.

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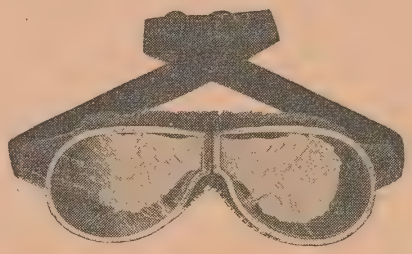
An illustrated list of presents has been issued, but articles not included in this can be viewed at any of the branches.

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Ordinary glass in these goggles would have meant blindness for the wearer. Although the Triplex Safety Glass in this case was cracked and shattered, not a particle became detached and it still remained perfectly water-tight and air-tight.

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COMMERCIAL AERONAUTICS

LOCAL, OVERSEA SERVICES AND GENERAL PROPAGANDA.

By "MEDWAY."

The report of the Civil Aerial Transport Committee is a very bulky document which will need a great deal of consideration in detail. One may, however, start off by taking one or two points in the main conclusions of the Committee, and particularly in their recommendations on subjects regarded as specially urgent.

Aerial Routes.

The Committee draws attention to the importance of immediate preliminary inquiries as to routes, landing-grounds, and aerodromes, "involving in the two latter cases consultation with local authorities." The necessity for such preliminary inquiries has been emphasised several times in this section of The Aeroplane. The writer has advocated sending out pilots to make preliminary surveys in every part of the Empire, and to report as to the routes where aerial services are most obviously needed.

The general scheme of main routes is, of course, not a matter for local authorities. The thing must be considered Imperially. Local surveys would serve to supply what we might describe as the "veins" as distinct from the main "arteries," but as regards these veins or local services it is just as necessary to consult local authorities as it is to call them into conference on the subject of landing-grounds and aerodromes. For this reason I take exception to the wording of the sentence quoted above.

If we confine ourselves to the laying out of the main routes, we limit the amount of the new ground that it is possible to break. To illustrate my meaning, let me take a rough parallel. Ocean transport enables us to communicate with and develop places lying along the coast-line, and particularly those possessing harbours. Unless supplemented by rivers, canals, road or rail transport, it fails to develop inland districts at any considerable distance from the coast.

In much the same way a system of aerial arteries, Imperially planned, would bring us into much quicker and better touch with the various important centres where landing-grounds or aerodromes would be established, and more or less into touch with minor centres lying directly along the route and serving as intermediate stopping-places.

Branch Routes.

We can no more stop at this stage of development than a railway can stop at the construction of a main line. Numerous branch lines are necessary both as feeders and for the purpose of giving more general service. Beyond the branch lines again, road motors or horsed van services have to be established to serve more sparsely populated districts.

Wherever we plan a main aerial artery, we shall have to plan a number of radiating systems of local air routes connecting up with the intermediate stopping-points. Thus, before we determine what those intermediate points shall be, we must get into touch with the local governing bodies with a view to the selection of intermediate points best situated for the purpose of developing valuable country by the establishment of local lines.

The Surveying of Routes.

Having planned the broad outline of a main route, our surveying pilots should go out and study the district round each proposed stopping-point, reporting as to whether these points are correctly chosen from the standpoint of local services, or whether it would be better to vary the main route somewhat in order to tap other districts to greater advantage. The surveying pilots in each case would naturally start by getting in touch with the local authority or local government.

It would be found that there are many cases in which it is well worth while to establish aerial services over comparatively short distances—say, 50 or 100 miles—because the traffic would not justify the construction of road or rail. But yet some form of modern communication is absolutely essential as a preliminary to the development of valuable property.

In fact, every local authority or government ought to be given the opportunity of putting forward its own ideas as to what local services would be beneficial, and, therefore, the proposition of consulting local authorities should not be limited to questions of the provision of landing-grounds and aerodromes.

Propaganda.

Another recommendation of the Committee is "that it is a matter of urgent necessity to establish a system of propaganda throughout the Empire, in order to convince the whole nation of the vast importance and possibilities of aerial transport and to familiarise the governments and the local authorities with the subject." By far the best system of practical propaganda would be the presence of practical pilots with practical aeroplanes, prepared to go over all the routes suggested and prove to the local population, beyond dispute, the possibility of turning aerial transport to real commercial account.

We must not make the same mistake that we have made in so many other spheres of industry. It is often said that the British manufacturer expects to sell his goods abroad by means of catalogues and advertisements without demonstrating them for the benefit of the buyer. The prospective buyer is expected to write home and give a firm an order for something that he has never seen and with the working of which he is unfamiliar. Meanwhile, the foreigner comes along and shows what can be done by actual demonstration of the article to be sold.

The case of the aerial service is much the same. If the foreigner comes along and demonstrates first, the bulk of the orders will go to foreign manufacturers. We recognise that the British industry must be kept going, because the Empire will not be safe without it.

We must, therefore, prevent the foreigner from supplying the material for services centred wholly or mainly on British soil. We can only create the necessary public sentiment by showing British machines to the public all over the world. Glowing accounts of the magnificent work done by the Air Force during the war may do something, but they will not do a tithe of what can be done by ocular demonstration.

There ought to be plenty of machines and pilots avail-

able now, and my idea is that cablegrams should be sent out to the local governments of every respectably important locality in the Empire, asking them whether they would like to have a pilot and a machine put at their disposal for the survey of routes and for the demonstration of possibilities, the whole of the expenses to be borne by the Imperial Government. The results of this procedure would be a magnificent collection of most valuable information and some perfect photographic surveys of a large number of regions at present practicably inaccessible. Within six months, almost every inhabitant of the Empire, whatever his colour or his degree of savagery, would have seen aeroplanes in flight and learnt for himself something of what this new and great traffic revolution is going to mean to him.

Local Instruction in Aeronautical Questions.

The next step in propaganda has also been indicated in these paragraphs. This is the organisation in this country of gatherings of representatives of all parts of the Empire. The chosen few would thus be familiarised not only with one machine, but with a great diversity of designs, and would get a fairly good idea of the trend of development and the possibility of putting into practicable form any ideas which might strike them as desirable in planning out their local services.

This secondary form of propaganda would cost very little, and something of the kind is absolutely necessary as a supplement to the first and more general system. If we wait a year or so before doing anything worth mentioning, the foreign influences will be well established in almost every part of the globe. If we act now, we can fairly expect to get the logical reward which ought to follow upon the magnificent record of our flying machines and flying men under war conditions.

SEAPLANES IN COMMERCE.

By "Crystal Palace."

There is one very urgent need for commercial seaplanes to which attention has not so far been directed—namely, the need for them on the large rivers in America and Africa. This need is really more urgent in the case of two or three rivers, particularly those which flow through tropical forests, such as the Amazon, Congo and Zambesi, to name only a few, owing to the slowness of river transport over large distances when the river is in flood, or the shallowness of draught in dry seasons.

The impossibility of building railways in these districts is fairly obvious. It may, however, be said that railways are not necessary in these navigable river districts, but the lack of them must surely retard the progress of the country considerably.

Now, the seaplane would reduce the distances from the outer world of places miles up river by a large factor. It could, of course, make short work of the various curves and bends which have to be patiently navigated by the steamer. The total speed from place to place could be multiplied by about ten or twelve.

Regarding the design of a water aeroplane for river work. The problem is a very interesting one, and ordinary seaplanes at present existing for war purposes, although very useful, would hardly be ideal for this purpose. There must be thousands of machines already in existence which would be available almost immediately for the use of enterprising firms whose business is connected with these river districts. Facilities should be given for buying these machines, as well as advice and the loan of men from the Air Force, to firms with sufficient enterprise to take up aircraft for transport purposes.

In conclusion, to give an actual example: There is at present a town of over a hundred thousand inhabitants at a distance of over a thousand miles up river in Brazil. A steamer takes 3½ days to reach this town against the strong currents and through winding tropical streams. These steamers arrive from the outer world about once a fortnight.

No railway can be built to this town, except at enormous expense through mountains and a foreign country. The aeroplane would undoubtedly bring this town into prominence and no more will be heard of the railway scheme. Untold wealth is hidden, or scarcely hidden, away in the centre of Brazil, and the water-aeroplane is going to help its development and exploitation.

COUNTING ONE'S CHICKENS.

The following letter has been received from "Chevron Or":—

To the Editor of "The Aeroplane."

The article I wrote under the above title has, it appears, annoyed the critic who calls himself "Wings." This I deeply deplore, and would like to be given space in which to reply to him.

I find this rather difficult in some ways, particularly so when he says that anybody who considers the carrying of dustbins and such like articles to be absolutely mad, and more particularly so when he says in the last few lines of his letter that given the assistance of a few enthusiasts we probably shall see even dustbins being delivered from London to Edinburgh by air.

Whether "Wings" classes himself amongst Category A, i.e., those who are mad, or whether he places himself under Category B, outside the enthusiastic group mentioned at the end of his letter, must be left open, but to forsake matters which, after all, may be only a question of opinion, I think it is well to consider facts, and, in this connection, I would repeat that a very big dispatching house has gone closely into the question of aerial parcels delivery, and finds that the expense is so high that it precludes all chance of establishing itself except in very rare instances.

As to the matter of sending a personal representative by air, that is purely a question of crediting the value of the time saved plus the extra business done against the expense of aerial travel and the cost of insurance.

As to safety; I have a very considerable mass of statistics, and I cannot agree that the aeroplane compares favourably even with the present-day car with its defects, nor can I agree that 99 per cent. of the accidents are due to carelessness.

May I repeat that I do not wish to be taken for a pessimist, but I do strongly desire to turn the Niagara of disconcerting criticism upon the columns of blathering journalese that daily erupts itself in the columns of our Press.

The Flying Machine is going to be all right later on, but, in the meantime, we must go slow and not risk disappointing the public by injudicious statements or by hastily organised and unskilfully carried-out aerial operations.

(Signed) "Chevron Or."

CIVIL AERIAL TRANSPORT.

GENERAL.

According to the "Evening News," a new air service for passengers, mails, parcels post, and parcels delivery for even larger goods will begin, it is stated, in the United Kingdom and the neighbouring Continent, but will develop to all parts of the world.

Every aeroplane will be supplied with a wireless installation and an efficient operator. Weather reports will be received from wireless stations at home and abroad.

As every aeroplane will doubtless have a distinguishing title it will be possible to send telegrams from any part of the world, or from any ship on the sea, to the aeroplane. It is intended that this organisation will be ready by the time peace is signed, and the relaxation of restrictions will allow the free flight of aeroplanes.

Arrangements have recently been made for the erection of wireless stations in the extreme parts of China, one on the frontiers of Kashmir and the other on the Chinese side of Siberia. For this purpose machinery will have to be conveyed right across China and transport by air will have to be arranged, for there is neither railway nor road.

The Marconi Company has arranged with Mr. Handley Page for the transport by one or more of his big machines.

U.S.A.

According to the "Times" correspondent, Capt. Benjamin B. Lipsner, who recently resigned his position as Superintendent of the United States Aerial Mail Service, announced on Dec. 17th that a syndicate had been formed with £200,000 capital for establishing an aerial passenger and express service between New York and Chicago.

Mr. Lipsner further declared that unless someone anticipated him he would attempt the first Transatlantic flight on June 15th. In this he would follow the route taken by the "George Washington" on its voyage to France with Mr. Wilson on board. A seaplane capable of making the flight, Mr. Lipsner said, is now in process of construction.

The service between Chicago and New York will, he hopes, start in May with a number of aeroplanes capable of carrying 40 passengers or their equivalent in weight.

ITALY.

On Dec. 15th a squadron of five aeroplanes arrived in Rome from Genoa after completing the journey in two hours and 20 minutes. They were received by representatives of the special Experimental Commission for Air Communications, which is showing great activity at present.

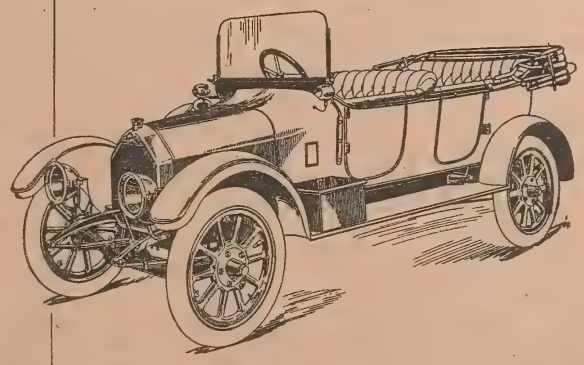
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SOME AERONAUTICAL FALLACIES.

The Critics of Afraes and his Replies.

[The following letters have been received criticising that provokingly cock-sure writer who signs himself "Afraes." The said writer replies to them in a manner which indicates that he is still unabashed and impenitent.—Ed.]

Sir,—In my desire for brevity when replying to the article by "Afraes," entitled Fallacy No. 1 (see The Aeroplane, July 17th), I regret having omitted words which would have made my meaning quite clear and the sentence he criticises more grammatical. (First letter in The Aeroplane for Aug. 7th, to which "Afraes" replied in The Aeroplane for Sept. 25th.)

I now repeat it with additional words in italics: "The function in each case is to alter the direction of movement, and neither the rudder nor the elevator is supposed to know why *the direction of movement has been altered,* or what the consequences will be."

If I understand him correctly, "Afraes" admits "Bolo Bertie's" analogy in the case of an aeroplane elevator and a rudder hung on a sailing-boat, but not if the rudder is hung on a motor-boat or a penny steamer.

Surely the function of the rudder and elevator is the same in all these cases, namely, to control or alter the direction of movement of the boat or aeroplane. The object in view is quite another matter.

In the case of the boat it may be to increase speed or reduce it, to spill the wind out of the sails, to pick up the owner's hat, to hit another boat on the port tack, to put a sea-sick passenger on the lee-side, or to take the turns out of the burgee, but such objectives have nothing to do with the principle of the rudder.

In the case of the aeroplane the reason for a change of direction of movement in a vertical plane may be to increase or reduce speed to avoid hill-tops and trees, to enable the observer to look in at our bedroom windows, or to create down-draughts in our chimneys, but those are matters extraneous to the elevator.

Under some conditions the rudder is used to prevent change of direction, such as when a sailing-boat carries weather or lee helm, or a motor-boat has a single propeller giving her a bias to port or starboard.

The same thing occurs with the elevator, I presume, when the aeroplane is under conditions of imperfect fore and aft balance.

In suggesting that "Bolo Bertie" may have graduated at the "seafaring University of Oxford," "Afraes," perhaps, overlooks the possibility of his having been an active member of the "Oxford University Sailing Club," in which event, he might have known quite a lot about rudders.

With regard to the futher remarks of "Afraes" on the handling of sailing-craft and the more or less superfluous rudder. I should not care to be afloat within the sphere of operations when he was steering his boat in a smart breeze with sails only. It might, however, be quite interesting seen from the shore, especially in a crowded roadstead.

(Signed) "Mersey Yachtsman."

Sir,—It is surprising that when a man sets out to expose popular fallacies he should himself be guilty of fallacies that can only point to a lamentable ignorance of both elementary dynamics and the technical subject with which he is dealing. I refer to an article entitled, "Some Aeronautical Fallacies," by "Afraes," in The Aeroplane of Sept. 25th, 1918.

The crux of his error lies in his statement: "The fallacy in the above argument is that a single force is capable of causing any body to rotate."

The argument referred to is that a lateral force applied to a rudder of a machine will cause the machine to rotate. Now, this argument is not a fallacy, nor does it assume that a single force is capable of causing a body to rotate. Will "Afraes" give an example of a single force acting on a body, remembering that "inertia force" or "acceleration reaction" is a force? Newton disposed of this when he said that action and reaction are equal and opposite.

If "Afraes" is still not satisfied, let him balance his cane in a horizontal position on his left hand. If he then drops his left hand smartly and strikes the end of the cane with the right hand in a horizontal direction across its length he will find that the cane will rotate. Now, the point is, if you apply a force to a free body, the Centre of Gravity will move in the direction of that force, and, that being the case, you will get a reaction parallel to your force and opposed to it acting through the Centre of Gravity.

Reverting to the case of an aeroplane. If one were to construct an aeroplane without any keel-surface or finnage (which is impossible) except a rudder at the tail, such an aeroplane would rotate under the influence of that rudder, but it would continue to move in approximately the same direction as before till the propeller pulled it out, or something else happened as the result of the side-slipping motion. So much for the "popular fallacy."

Now consider "Afraes" explanation of the action of the rudder of an aeroplane. He states, in fact, that the rudder gives the machine a lateral motion of translation, and that this, combined with the forward motion of the machine, reacts on the finnage, and, in conjunction with the rudder, turns the machine. Neglecting the fact that the centripetal force for the turn must be supplied by banking unless the pilot is looking for trouble, "Afraes'" point is nonsense.

An aeroplane must have more keel-surface moment behind the Centre of Gravity than in front of it. If this were not the case the machine would be in unstable directional equilibrium, but not for long. A slight turn due to a gust would bring the machine slightly sideways on to the wind, and nothing would then stop it from turning completely round till it was tail first. Who shall say what would happen next? And this is exactly what would happen to an aeroplane when it tried to turn if "Afraes'" point were correct. In other words, the finnage is for directional stabilising purposes, and the rudder has to overcome this stabilising force in order to turn the machine.

"Afraes" also shows a confusion of thought between turning the machine and changing the direction of travel of the machine. The former is done by a judicious use of the rudder and ailerons, the latter by the reaction on the main planes banked, and not by finnage. In this respect an aeroplane is totally different from a boat.



A German kite balloon passenger starting his descent.



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One other statement of "Afraes" is worth quoting: "If," he says, "you had an aeroplane with a big forward finnage, the force developed upon it by the initial yaw would be very large indeed, and if the moment of this force about the Centre of Gravity were greater than the rudder moment, the machine would simply spin round and smash." This statement, though a hopeless "non sequitur," is true.

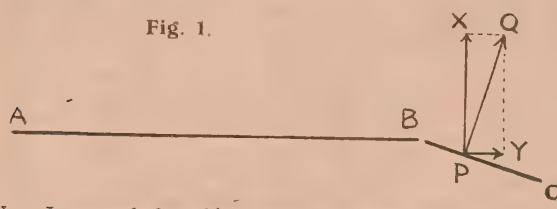
According to his argument, the less the rudder moment the more likely would this be to happen. From which it would follow that where the rudder moment was nil it would always happen. This is also true. But the point he does not see is that the rudder moment helps and does not oppose this stabilising force. From which it follows that in no case may this reaction be allowed to come in front of the Centre of Gravity.

(Signed) "Wild Irishman."

Sir,—I have read with interest the recent articles in The Aeroplane, by "Afraes."

In article No. 3 there appears to be an omission every bit as misleading as a definite misstatement. The author states that no turning movement will occur by virtue of the force P X Fig. 1 alone, a statement which no one will challenge. He goes on to state that the crabwise movement will be checked by the force due to the air striking the body at an angle (Fig. 3). (See The Aeroplane, Sept. 25th.)

Fig. 1.



Now I contend that this statement is both misleading and inaccurate, for the object of banking a machine is to introduce a force for the purpose of arresting this sideways motion. This checking force is introduced by virtue of the fact that when a machine is banked the lift force tilts as though rigidly attached to the machine; it may then be resolved into two forces—one acting vertically and the other horizontally, the former sustaining the weight of the machine, whilst the latter with the assistance of any fin force forms the second member of the couple sought after by "Afraes."

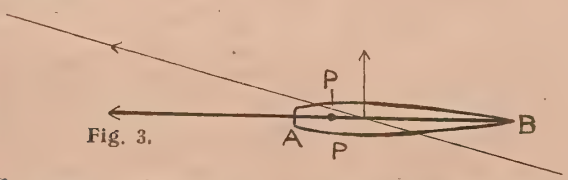


Fig. 3.

One may note that the sum of these forces must be appropriate to the angular velocity, the mass and the radius of the turn.

A comparison between the old box-kite and the fuselage type makes the above point clear. The old Henry and Maurice Farman's were practically innocent of fin surface; any that there was being mainly behind the C.G. But these machines made just as good turns, by means of the method here referred to, as any of their later-day brethren. (Signed) S. C. S. Part.

Sir,—Apropos the following remark by "Afraes": "A certain cause gives rise to an effect which is itself the cause of an opposite effect, Lewis Carroll never composed so much nonsense in so small a space.

I read somewhere that fainting is caused by blood receding from the head, and the resultant horizontal position of the body allows the blood to circulate freely again, thus bringing the patient round in time. This seems sound enough. I only submit this as a point of logic. I have no quarrel with "Afraes'" explanation of lateral stability.

(Signed) "Anti-Aircraftsman."

Sir,—We are greatly interested in the article by "Afraes" in your issue of Nov. 13th on "Some Aeronautical Fallacies."

While appreciating his desire to educate the industry, we venture to point out that in casting the beam out of other people's eyes he has overlooked the mote in his own. We take particular exception to his statement that "No one in his senses would use a gear on the flywheelless four-cylinder engine, because it would be simply asking for trouble." May we refer him to the German aero-engine trials in 1913, in which a four-cylinder Mercédès engine fitted with a reduction gear was entered?

This engine had no flywheel, and, according to the official report, "It was not found necessary to fit a flywheel on the crankshafts of these engines with reducing gears." In "All the World's Aircraft" (Sampson Low, Marston & Co.), if "Afraes" will turn to page 111d, he will find illustrated a Beatty 60-h.p. four-cylinder engine with a reduction gear. We think if "Afraes" cares to take the point up with the Beatty School of Flying he will find that no objections or drawbacks have occurred with this engine. In fact, we understand that this engine gives very satisfactory service indeed.

To use "Afraes'" own words—"Here is a genuine case of a commonly held fallacy," and it would be as well if, when people are writing articles for universal consumption, they would fully investigate the point at issue.

All the information alluded to in this letter was available to the writer of the article, and in these times when we are endeavouring to produce a commercial aero engine in which the four-cylinder engine will probably occupy a place, it would be as well if fallacies such as the above were speedily contradicted.

Yours faithfully (for the Selsdon Aero & Engineering Co., Ltd.),

(Signed) W. F. Hooper, designer.

"Afraes" Replies.

In reply to the interesting letter from "Mersey Yachtsman," perhaps I can make the position quite clear in regard to the difference between the rudder of a sailing vessel and that of a motor-boat (penny steamer or rowing-boat comes in the same class as far as this argument is concerned) by pointing out that throwing the helm over to a moderate angle and keeping it there will have different effects according to the type of vessel the experiment is made with.

In the case of the motor-boat setting the rudder at an angle with the keel will cause the vessel to travel in a circle, the diameter of which is, of course, dependent upon this angle, whereas in the case of the sailing-boat (please excuse me if I am going wrong on the "boat" and "ship" business), throwing the helm over will not necessarily cause a continuous turning movement.

The vessel will alter course, and will then hold a new course indefinitely. This new course will, in certain circumstances, be perfectly straight, providing the speed of the wind remains constant.

In other words, whereas in a steamboat the function of the rudder is used entirely to alter the course, on a sailing vessel it exists for the purpose of adjusting the angle of incidence of the sails relation to the wind. Analogously, on an aeroplane, it is used primarily for the purpose of altering the angle of incidence of the main planes' relation to the flight path.

Obviously, it is used as a rudder when sudden changes of course are necessary, but may I remind "Mersey Yachtsman" that whereas on a motor-boat the rudder will always give the same effect, no matter how slowly the vessel is moving, on both an aeroplane and a sailing vessel circumstances frequently arise in which no amount of elevator, or rudder, adjustment has any influence at all, i.e., when stalling occurs. I'm not quite certain what the nautical equivalent is, but I fancy it is being "in stays," or words to that effect.

One thing I don't quite understand, and that is, why a yacht should be required to go slowly, unless it be in order to sail closer "into the wind." This is, needless to say, the equivalent of an aeroplane climbing and the subsequent running of the yacht "before the wind" is the equivalent of the subsequent dive of the aeroplane. Here the analogy between the yacht's rudder and the aeroplane's elevator is exact, and I'm rather surprised that a yachtsman fails to concede me this point. However, I hope the "All clear" may now sound.

Turning to "Wild Irishman's" characteristically wild onslaught, it seems to me we differ in trivialities rather than essentials, since it is obvious to anyone who read my original article and his criticism that (in spite of the bad expression which he properly jumps on) we are in perfect agreement on some of the main issues.

However, I will proceed to defend myself from his attack in the following manner. (Unfortunately, I have not got a copy of the original article by me at the time of writing, so cannot refer to my exact words.)

Firstly, with regard to the capability of a single force to rotate a body. "Wild Irishman" describes an experiment with which I am, of course, perfectly familiar, and proceeds to employ it as a *suggestio falso* by the time-honoured manœuvre of *suppressio veri*.

If we perform this stick experiment we shall at once see that the body which is acted upon by a single force may certainly be given a rotational movement; but what is of great importance, that this rotational movement is always accompanied by a translational movement as well. Thus the movement of the stick is not purely rotational.

Just as I emphasised in the case of the aeroplane, the first action of the rudder is to cause a yaw, so, in the case of the stick, the effect of the single blow is to drive it sideways as well as to cause it to spin round. I would like "Wild Irishman" to explain how with a single force applied to a body he can rotate it, but without moving it bodily. His argument is, of course, perfectly clear, but he conveniently forgets the yaw, or translational movement.

I do not in the least deny that an aeroplane must have more keel surface behind the C.G. than in front of it, as, in fact, was very clearly shown in my original argument, but I do deny that the couple which I then showed at work would result in the aeroplane spinning round. And for this reason.

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C.D.C.



At the commencement of the yaw the relative angle of incidence of the body is very small, and the C.P. therefore is well to the front.

Any tendency to spin round, without at the same time altering the direction of the motion of translation, involves a yaw at a bigger angle of incidence, and such being the case the C.P. will move backwards. If, on the yaw, the C.P. is behind the C.G., the machine will obviously straighten itself out, and it can therefore only perform a turn providing the C.P. comes in front of the C.G.

Just as in the case of the elevator, setting it at a negative angle causes the C.P. to move in front of the C.G., and the machine accordingly tilts up, so does the rudder alter the position of the C.P. in the vertical plane. None, certainly not myself, ever denied that the rudder had to overcome the "stabilising" effect of the finnage behind the C.G.

I do not, however, agree that an aeroplane is totally different from a boat. "Wild Irishman" insists on dragging in the ailerons as necessary to the performance of a turn, but he ought to be perfectly well aware that this is not the case, and that on a stable machine moderate turns can be carried out without any aileron adjustment at all.

It will be noticed from Mr. S. C. S. Part's letter that he agrees with me entirely on the single force proposition. I agree with him with regard to the force introduced by banking, which, needless to say, nearly always accompanies the turn.

But how about "flat turns," in which there is no banking effect at-all? It was in order to take in flat turns as well as banked turns that I left this banking effect out of consideration. Evidently, however, I did not express myself as clearly as I ought to have done, and it is a good thing that in my note to my first article of this series I frankly admitted that I should probably be guilty of making mistakes myself.

"Anti-Aircraftsman" takes me up very neatly on a point of logic, but I'm afraid he is not quite justified in his example. There would be, perhaps, "something in it" if fainting caused the patient to lie down instead of causing him to fall down. I imagine that a fainting high altitude tight-rope artist might find that the "resultant horizontal position" did not allow "the blood to circulate freely again."

In this case, you see, the first effect is not necessarily the cause of an opposite effect. If it were, then the fainting tendency would be prevented and would not take place at all, whereas in the example cited, it does take place and is frequently, though not, as shown above, necessarily cured by a secondary effect to which it has given rise. In other words, fainting of itself does not induce a free circulation of the blood.

THE RELATIVE INFLAMMABILITY OF DOPES.

The following letter has been sent for publication, and is reproduced without expression of opinion in any direction. Delay in publication has been unavoidable. In reading the letter it should be remembered that this country is still in a state of war:—

Sir,—In certain newspaper reports on the findings of the sub-committee appointed to investigate the contract of the British Cellulose Co., reference is made to the Air Ministry sending out an inflammable substitute for cellulose acetate dope, owing to the shortage of the latter. This statement cannot in fairness be made by anybody with a knowledge of the facts, for, to my knowledge, at least, the majority of the dope sent out apart from cellulose acetate dope was at least as little inflammable as the cellulose acetate variety, and, undoubtedly, afforded a better resistance to ignition of the wings by "tracer" bullets and other incendiary methods of firing aircraft by means of the fabric.

The question of the relative danger from inflammability of dopes has never, to my mind, been properly dealt with. In the Specification known as D.101 of April, 1918, drawn up by the British Engineering Standard Association, a "method of testing the inflammability" and a "method of measuring the rate of burning" is laid down. The test of the former is to place a small cube 4 mm. of celluloid on top of the fabric and to ignite the cube. It is stated that "the celluloid cube shall not produce more than a slight charring, and the fabric itself shall not ignite."

The man in the street would naturally ask why a cube of this specific size should be taken, and why the size should not be increased until the fabric does ignite.

As regards the method laid down under the above specification for measuring the rate of burning, which is to ignite the edges of a hole in the fabric and to measure the time taken for the flame to travel, one cannot take exception to this, beyond suggesting that if the stringency of the test for inflammability were increased the dope that offers the better resistance to ignition should have the preference over one that burns at a slower rate, for when the fabric of an aeroplane wing is once aflame, if it does not blow out the aviator has a very small opportunity of getting to earth in safety.

My object in writing to you is to suggest a more efficient method of testing the danger from inflammability. To arrive at the correct relative values of dope in this connection the following tests should be made:—

(1) Facility with which flame is put out by the wind, assuming the fabric to have ignited.

(2) Resistance the dope offers to ignition.

(3) Rate of burning if and when the fabric is ignited.

I have placed the qualities roughly in their order of importance. If a dope offers a greater resistance to flame, it may, as a general rule, be said that it is better than a dope that offers a less resistance to flame, even though the latter burns slower, for the reason that when the fabric is once ignited the short time it takes the wings to burn gives the pilot insufficient time to reach the earth.

Secondly, if the burning is of such a nature that it is easily extinguished by the wind, it will, in turn, be seen that such a dope, even assuming it to ignite more readily, is probably of greater value than one which is harder to ignite but is not blown out by the wind so readily.

To my mind the great disadvantage of the Cellulose Acetate Dopes in this connection is that they melt from the heat, and they are, in consequence, the most difficult to put out when once ignited, though, no doubt, something can be said in their favour in connection with the third quality, i.e., rate of burning, as they perhaps burn a little slower than a type of nitro dope made on the lines of "Titanine." The latter, however, offers a greater initial resistance to flame, and also has the advantage of being readily extinguished by the wind.

Until the Air Ministry lays down a definite standard for tautness all comparative dope tests have their value limited. Given a definite standard of tautness the fireproofing quality can, with certain types of dope, probably be increased without overstepping the limit.

In testing dopes for inflammability, they must obviously be applied on double-sided frames, so as to produce, as nearly as possible, the conditions of an aeroplane wing. These frames should, if possible, be moved quickly through the air during the process of sending incendiary bullets through them. And as much more efficient methods of incendiary attack will, no doubt, be found, should the war be prolonged, one should not necessarily limit this to the incendiary bullets at present in use, but should increase the stringency of the test so far as to ensure the ignition of the fabric. This would definitely decide which dope offers the greatest resistance to flame, and would show whether the wind caused by the current of air would extinguish it.

Personally, I have always been of the opinion that it is not generally realised what a vulnerable target the fabric of an aeroplane wing affords. It is a common thing to read of machines that have had upwards of 30 or 40 bullets through the wings returning to their base without discomfort. Should any one of these cause the fabric to ignite, however, the machine would be doomed.

I am sure I have no wish to see the "Hunlike" methods of fighting by liquid fire, etc., etc., increased, but if we wish to retain our supremacy of the air we must be prepared for all eventualities, and by realising exactly what might be done against us, we should best be able to take the most effective precautions and counter-measures. To my mind there is no reason why our aeroplanes should not be sent out capable of resisting much more effective media for conveying flame through igniting the fabric than the present tracer bullets. One might readily predict that if the necessity for this does not arise in the present war it is bound to in the next (which God forbid!).

I have limited my remarks to the possibility of setting machines on fire through the medium of the doped fabric. Ignition of the petrol through a tracer bullet penetrating the tank is quite another matter, and one that I must leave to others to deal with. The petrol tank, however, does not occupy more than 1 per cent. of the area of the machine, whereas fabric occupies more than 90 per cent. of it.

(Signed) T. W. H. Ward,
Oct. 23rd, 1918. Managing Director, Titanine, Ltd.

ASCOL NEWS.

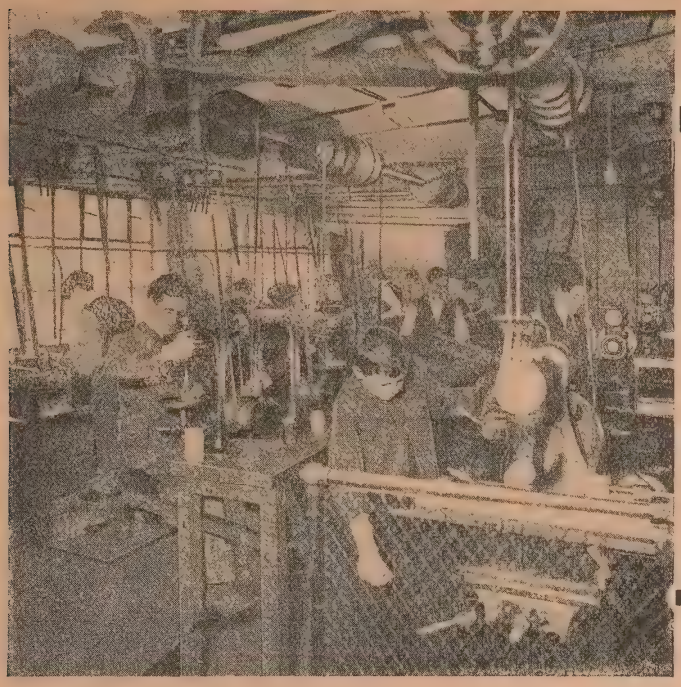
The first edition of "Ascol News," business journal of the Aircraft Supplies Co., Ltd., and formerly known as the "Aircraft Supplies," was published on Dec. 14th. It will next appear on Jan. 2nd, and thereafter each fortnight.

During the period of hostilities this journal and stock list was entirely devoted to aircraft parts and supplies, but it has now been rearranged so that the details of the stock may be intelligible to any trade, and particularly the Motor Industry.

From the announcement of the post-war programme of the Aircraft Supplies it is noted that their energies will be devoted to the requirements of the Motor Industry, but they will also continue to hold stocks of those supplies which will be of use in the aircraft and other industries.

Another feature in the post-war programme of this house is the expected change of the name of the company to "Ascol," Ltd. The figure of Mr. "Ascol" will be used as a registered mark, the business already being well known in the Aircraft Industry as "Ascol" house.

"Ascol News" is not only worth the subscription fee of 10s. per annum because of the stock lists contained therein, but the journal contains many articles of interest to the various industries.





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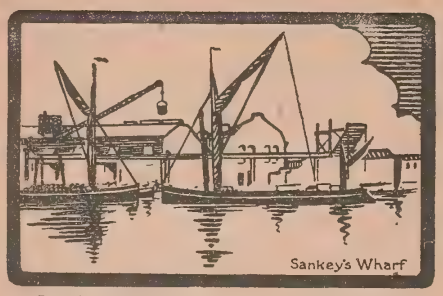
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BRUSHES (Dope) "Ascol"	—	23
" (Various)	—	23
C—CABLE	—	17
CANS (Dope)	—	23
CLIPS (Hose)	208	21
E—EYEBOLTS	122/3	16
EYEBOLTS & NUTS (Metric)	—	17
EYEBOLTS (Special)	—	17
" ("Avro")	—	17
" (D.H. 6)	—	17
EYELETS & WASHERS	232	24
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" (Fork	168 & 175	21
" "	1168/70	21
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M—MICROMETERS ("Ascol")	—	23
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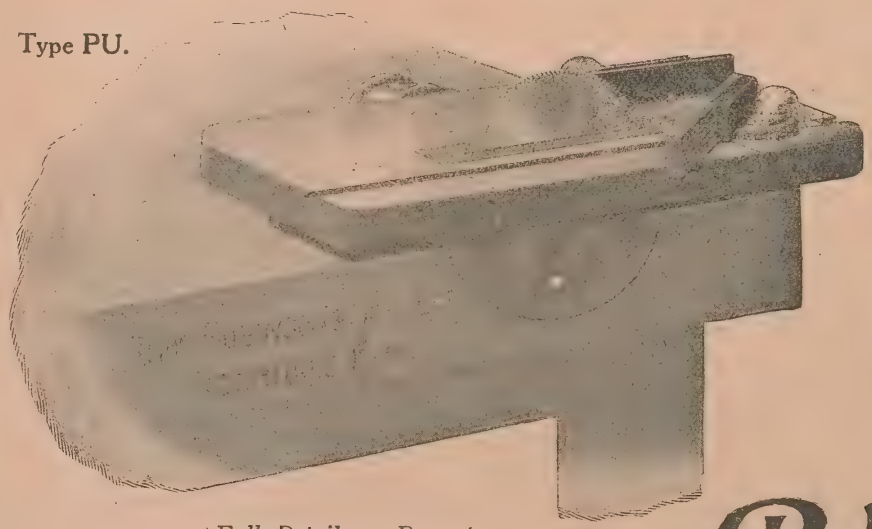
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(*Continued from page 2379.*)

Lt. (actg. Capt.) C. M. Seth-Ward to be graded for pay as Capt. whilst empld as Capt., April 1st.

Lt (Hon. Capt.) G. F. Lucas to be actg. Capt. whilst empld. as Capt., April 1st.

Lt W. Boag to be actg. Capt. whilst empld. as Capt. (Gr. A.) Nov. 1st.

Lts. to be actg. Capts. whilst empld. as Capts. (Gr. B.) :—H. J. Barwick, F. A. Roberts, E. G. Webber, Oct. 3rd.

Sec. Lts. to be actg. Capts. whilst empld. as Capts. :—C. C. Bracebridge, O. F. Cooke-Yarborough, C. Curwen, R. W. Davies, (Hon. Capt.) R. C. Fowler, April 1st.

Sec. Lts. to be Capts. whilst empld. as Capts. (Grade B.) :—(Actg. Lt.) C. F. Gorringe, Oct. 3rd; A. J. Corbitt; (Actg Lt.) N. Openshaw, from (Ad.), F. H. Sandy, Nov. 2nd

Lt. A. Williams-Summersgill to be Lt. (Gr. A.), from (O.), Oct. 31st.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. :—(Hon. Lt. J. Drew, (Hon. Capt.) R. Godfrey, from(Ad.), H. H. Maudsley, T. E. Morton, April 1st; B. F. T. Hare, May 8th; G. J. C. W. Fitzwilliam, July 20th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. (Gr. A.) :—J. S. Hilton, Nov. 1st. (Substituted for notification in "Gazette" Nov. 26th); A. E. Case, G. T. H. Pack, Nov. 27th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. (Gr. B.) :—(Hon. Lt.) N. W. Walmsley, M.C., July 20th; F. J. F. English, A. Garrity, L. F. Roslyn, Oct. 3rd; W. Daughton, Oct. 24th.

P. H. Wellum (Sub-Lt., R.N.V.R.) is granted a temp. commn. as Sec. Lt. (Gr. A.), Nov. 3rd, with seny., April 1st.

The following Cadets are granted temp. commns. as Sec. Lts. :—36678 P. Collins, Aug. 27th; S4/174402 E. H. Harrison, Sept. 11th; 184941 G. K. Lindsay, Sept. 23rd; 5044 G. V. Dowding, 127664 E. C. Cous'ns, Sept. 24th.

Lt. H. R. South is dismissed the Service by sentence of a General Court-martial, Sept. 17th.

Capt. W. E. G. Ord-Statter (Capt., K. O. R. Lanc.R.) relinquishes his commn. on ceasing to be empld., Nov. 3rd

The following Sec. Lts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lt. :—E. S. Daniel, G. L. Mechan, Dec. 18th.

The date of appt. of Maj. S. J. L. Vincent is Aug. 10th, and not as stated on page 1139 of "Gazette," Nov. 29th.

The notification in "Gazette," Nov. 15th concerning Capt. R. K. Paton is cancelled.

MEDICAL BRANCH.—W. G. L. Wambeek (late temp. Capt., R.A.M.C.) is granted a temp. commn. as Capt., Nov. 14th

The following are granted temp. commns. as Lts :—J. B. Barnett, C. H. Young, Dec. 16th.

The regt. of Lt.-Col. T. D. C. Barry, I.M.S., is as now described, and not as in "Gazette," Nov. 26th.

The notification in "Gazette," Dec. 3rd, concerning C. C. Rowland is cancelled.

The surname of Capt. J. C. H. Allan is as now described, and not as in "Gazette," Nov. 26th.

CHAPLAINS BRANCH.—Rev. A. J. N. Saunders is granted a temp. commn. as Chaplain, with the relative rank of Capt, Dec. 14th.

MEMORANDA.—Sec. Lt. A. G. F. Nash to be actg. Capt. whilst holding a special appt. at the Ministry of Munitions, June 20th.

Sec Lt J N. Macdonald to take rank and prec. as if his appt. as Sec. Lt. bore date Oct. 15th.

The notification in "Gazette," May 31st, concerning Lt. C. J. Killeen is cancelled.

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, Dec. 17th.

The following were severally introduced into the presence of His Majesty, when the King invested them with the Insignia of the respective Divisions of the Most Excellent Order of the British Empire into which they have been admitted :—

OFFICERS.—Lt.-Col. Alexander Winter, R.A.F.

MEMBERS.—Lt. Cyril Strother, R.A.F.; Maj. Frederick Whitfield, R.A.F.

THE CASUALTY LIST.

MILITARY.

Reported Dec. 18th.

The following officers, who were prisoners of war in Germany, have been released :—

Briggs, Lt. L. R., Lond. R., attd. R.F.C.; Murray, Lt. D. C. G., R.E., attd. R.F.C.

Reported Dec. 19th.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England :—

Andrews, Lt. F. C., R.F.C.; Atkins, Lt. G. C., R.F.C.; Bennett, Lt. C. D., R.F.C.; Cobbold, Lt. F. R. C., R.F.C.. Fleming, Lt. J. A. M., R.F.C.; Slee, Lt. F. D., R.F.C.

The following officer, who was a prisoner of war in Turkey, has been released :—

Heathcote, Lt. L. W., Aust.F.C.

CASUALTIES AMONG W.Os., N.C.Os., AND MEN. THE DATES ARE THOSE OF THE OFFICIAL LIST.

The following soldiers, who were prisoners of war in Germany, have been released, and have arrived in England :—

DEC. 9th.—R.F.C.—Bastick 44069 2nd Cl Air Mech. F. H. (Paignton); Digby 4043 1st Cl Air Mech B. (Clapham Park, S.W.); Hewitt 94294 2nd Cl Air Mech. W. (Portadown).

The following soldier, who was a prisoner of war in Turkey, has been released :—

AUSTRALIAN IMPERIAL FORCE.

DEC. 9th.—F.C.—Sloss 11 J. McK.

DIED.

DEC. 12th.—F.C.—Hurst 1463 J. E.

AIR FORCE.

Reported Dec. 18th.

KILLED.—Whitham, Lt. J. H.

PREVIOUSLY REPORTED MISSING, NOW REPORTED KILLED.—Russell, Sec. Lt. R. F.

Sumsion, Lt. F.

REPATRIATED.—Adams, Sec. Lt. N. F.; Allan, Sec. Lt. C. M.; Ambler, Lt. J. J.; Beesley, Sec. Lt. R., Bowater, Capt. A. V.; Bowles, Lt. F. S.; Bruce, Sec Lt. A. P. C.; Caswell, Lt. G. F. C.; Cole, Lt. H. A.; Coleman, Sec. Lt. J. P.; Coles, Sec. Lt. G. T.; Collins, Sec. Lt. J. C.; Conlan, Sec. Lt. T.; Conover, Lt. C. C.; Evans, Sec. Lt. A. W. R.; Eyres, Lt. L. H.; Fairhurst, Sec. Lt. A.; Farquharson, Lt. R. J.; Fellows, Lt. H. V.; Fleming, Sec. Lt. P. J. A.; Forman, Capt. J. H.; Formilli, Lt. G. C.; Francis, Sec. Lt. C. E.; Gadd, Sec. Lt. W. G.; Gladstone, Lt. C. A.; Goodfellow, Sec. Lt S. J.; Goodson, Lt. A. R. L.; Gower, Lt. J. L.; Henry, Lt R. A.; Holbrook, Lt. C. M.; Hunt, Sec. Lt. K. P.; Hunter, Lt. H. C.; Hyde, Lt. H. E.; Ingram, Capt. R. S. S.; Jackson, Sec. Lt. W. R.; Keble, Sec Lt. F. J.; Lewis, Lt. W. T. S.; Living, Lt. C H.; Luard, Sec. Lt. R. B.

Reported Dec. 19th.

DIED.—Corbett, Lt.-Col. C. D. H.
Dyson, Lt. H. R.
Leeming, Sec. Lt. L.
Spencer, Lt. H.
Walton, Capt. J. W

REPATRIATED.—Adams, Lt. F. P., Bird, Lt. B. A., Crossley-Meates, Lt. B., Crosbie, Capt. D. S. K., Gaye, Capt. A. D., Holman, Sec. Lt. H. G., McKay, Capt. E. A., M.C., D.F.C., Matthews, Sec. Lt., J. A., May, Lt. L. B., Moore, Lt. C. R., Mucklow, Lt S. L., Naylor, Lt. C. B., O'Connor, Lt. O., Palmer, Lt. C. V., Payne, Sec. Lt J. M., Payne, Sec. Lt. P., Peeling, Sec. Lt. H. V., Pope, Lt. R. A. B., M.C., Riffkin, Sec Lt. R., Robinson, Lt B. W., Robinson, Sec. Lt. F. B., Rolfe, Lt. E. R., Rofe, Sec. Lt. H. H. Simson, Sec. Lt. J. A., Sinclair, Sec Lt D B., Smith, Lt. G. H. B., Smith, Lt. L. H., Sorley, Sec Lt. J. T., Stockman, Lt. E. J., Stockwell, Sec. Lt. L. G., Stone, Lt. R. H., Strathearn, Lt. W. M., Taylor, Sec. Lt. J. C., Thomson, Lt. R. W. L., Walker, Lt. E. G. S., Wells, Capt. G. A., Windover, Capt. W. E., Wise, Lt. S J., Wood, Lt. A. W.

Reported Dec. 20th.

DIED.—Benfield, Lt. A. W.
Clarke, Capt. W. R. B
Hainsworth, Lt. G.
Pearce, Maj. S. M.
Poole, Lt. S. R.

REPATRIATED.—Crookell, Sec. Lt. S. E., Dunlop, Sec. Lt. J. M., Hall, Sec. Lt. W. A., Herriot, Lt. W. M., Macfarlane, Lt. W. K., McCullock, Sec. Lt. I. M., Powles, Lt. G. P., Rochford, Lt. S. W., Schorn, Sec. Lt. F. F., Slade, Sec. Lt. R. J., Wyncoll, Sec Lt. A. W., Yeomans, Lt. J H M.

CASUALTIES AMONG W.Os., N.C.Os. AND MEN OF THE R.A.F. THE DATES ARE THOSE OF THE OFFICIAL LIST.

KILLED.

DEC. 17th.—Logan 169528 2nd Pte. D. (Howwood); Nicholls 1270 Serjt.-Mech. J. A. (Brixton).

DIED.

DEC. 17th.—Bradbury 27147 Cpl.-Mech. S. (Macclesfield); Cleverly 79728 3rd Air Mech. W. J. (Melksham, Wilts); Cooper 10532 Cpl.-Mech. W. F. (Hove, Sussex); Cummins 1174 Serjt.-Mech. A. G. (Salisbury, Wilts); Davidson 15848 Cpl.-Mech F. (Montrose), Higgins 12119 Cpl. W. H. (Chiswick, W.), Hyne 52468 2nd Air Mech. G. H. (Southsea); Johnson 120442 2nd Air Mech. W. G. (Aldershot), Lees 50655 2nd Air Mech. E. (Romilly); Martin 25921 3rd Air Mech. R. (Golder's Green); Meads 24298 1st Air Mech. T. W. (Brentford); Miller 13825 1st Air Mech. B. (Homerton); Milton 20177 1st Air Mech. T. C. (Tooting); Mitchell 124440 2nd Air Mech. W. (Bradford); Montgomery 286791 2nd Pte. W. (Carlisland, C. Tyrone); Neale 38402 Cpl.-Mech F. (Hythe); Peacock 60839 Cpl.-Mech.E. (Knaresboro); Pearce 9514 1st Air Mech. E. (Pencoed, Glam.); Phoenix 76182 1st Air Mech. C. E. (Diss); Routledge 77641 1st Air Mech. A. (Highgate); Vallancey 65078 3rd Air Mech. R. V. (Cricklewood); Wylie 15860 1st Air Mech. J. (Edinburgh).

DIED OF INJURIES.

DEC. 17th.—Page 163781 3rd Air Mech. A. E. J. (Burnbeck, Lanark).

PERSONAL NOTICES.

NAVAL.

DEATH.

TERRY.—Lt. Howard Terry, R.A.F., who died at his residence at Balsall Heath, Birmingham, on Nov. 28th, after a short illness, from pneumonia following an attack of influenza, was 36 years of age. Immediately upon the outbreak of war in 1914 he gave up his business and voluntarily joined the armoured car section of the R.N.A.S., and served in Belgium and France for upwards of six months under Sqdn. Comdr. Sampson, as he was then. From France he was sent to the Dardanelles, where he remained until the evacuation, and then went to Egypt, eventually being transferred to Salonika, where he remained until he was invalided home in March, 1917. He was gazetted on Aug. 26th, 1917, in the R.F.C. as equipment officer, and he held the 1914 Star. He was a native of Redditch, and leaves a widow and two children.

ENGAGEMENT.

HARRIS—CAMPION.—The engagement is announced between Capt. Stafford B. Harris, A.F.C., R.A.F. (late R.N.), only son of Lt. Comdr. G. H. Harris, O.B.E., R.N., of Lymington, Hants, and Enid, only daughter of Paymaster-Comdr. W. H. Campion, R.N., and Mrs. Campion, and granddaughter of Mrs. Wilsone, of Bonally, Murtle, Aberdeenshire.

MILITARY.

ENGAGEMENTS.

WILLIAMS—GIBSON.—A marriage has been arranged between Major E. L. Williams, M.C., E. Yorks. Regt. and R.A.F., only surviving son of Major and Mrs. Williams, of Southport, and Norah Christabel, "Biddy" (W.R.A.F.), elder daughter of Dr. and Mrs. L. P. Gibson, of Cowes, I.W. The wedding will take place at St. Mary's Church, Cowes, on Jan. 15th

PORTAL-WELBY.—The engagement is announced of Lt.-Col. C. F. A. Portal, D.S.O., M.C., R.A.F., son of Mr. and Mrs. E. R. Portal, of Eddington House, Hungerford, and Joan, youngest daughter of Sir Charles and Lady Maria Welby.

BIRTH.

LLOYD.—On Dec. 16th, at 23, Drayton Court, Drayton Gar-

dens, S.W., the wife of Capt. Humphrey Lloyd, M.C., 60th Rifles, attd. R.A.F., of a son.

AIR FORCE.

Death.

DAVIS.—While acting as an observer in an aeroplane on Dec. 18th, Flt. Cadet Herbert John St. Audrey Davis, R.A.F., aged 1[illegible], whose home address was Priory Lodge, Little Dunmow, Essex, fell out of an aeroplane from a height of 2,000 ft. and was instantaneously killed.

Marriages.

DURTNELL—EAST.—On Dec. 16th, at St. Stephen's, Kensington, Lt. H. W. Durtnell, R.A.F., elder son of Mr. and Mrs. Harry Durtnell, of Sevenoaks, was married to Evaline Adela East, youngest daughter of the late Mr. George East and of Mrs. East, of 1, Southwell Gardens, Kensington.

MULOCK—GOODMAN.—On Dec. 17th, by special licence, Col. Redford H. Mulock, D.S.O., R.A.F., son of Mr. and Mrs. W. R. Mulock, of Winnipeg, Canada, was married to Edythe Goodman, daughter of Mr. and Mrs. B. Goodman, of Edgbaston, Birmingham.

Birth.

MONTAGU.—On Dec. 16th, at 2, Grosvenor Crescent, S.W., the wife of Lt.-Col. G. F. Montagu, R.A.F.—a daughter.

* * *

Capt. John T. Milne, M.C., R.F.C., has been missing since Oct. 24th, 1917; also his observer, Lt. Stanley Wright, M.C., R.F.C. The machine they were flying was Bristol Fighter B.1117, District S.E. Dixmunde, Squadron 48. Any information from returned prisoners of war will be gratefully received by Mrs. John T. Milne, Lennoxwood, Windlesham, Surrey. Tele. 148 Ascot.

* * *

Anyone who saw a British aeroplane shot down near Magny La Fosse on Oct. 1st, and who knows where the observer, who was a General Staff Officer, is buried, is kindly requested to communicate with Mrs. J. J. Kirkpatrick, 12, Hill Street, Knightsbridge, S.W.1.

* * *

Capt. W. F. Cleghorn, R.A.F., was last seen at Roulers, wounded and in German hands, on Oct. 2nd. Any news of him will be gratefully received by Mrs. Barber, Duisk Cottage, Seal, Sevenoaks.

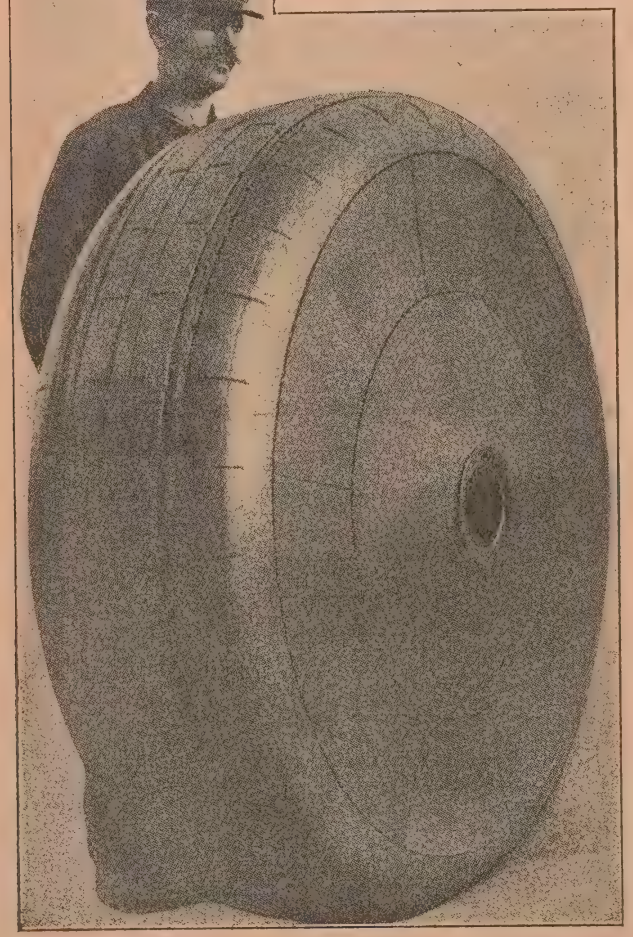
FLYING IN SOUTH AFRICA.

For cattle-breeding and climate, South Africa is a very fine country, and the Union holds a good position in the commercial world; but in matters pertaining to aviation it is very backward.

Six years ago, Messrs. Guy Livingston, Driver and Compton Paterson went out there, taking with them a Blériot monoplane and a biplane built by Mr. Paterson. They visited some of the bigger towns, and Mr. Paterson, in particular, did quite a lot of trick-flying for those days. He even made the first cross-country flight of any consequence in South Africa, flying from Kimberley to Klerksdorp.

Later, Mr. Paterson started a flying school in Kimberley, and trained the first members of the South African Flying Corps. These aviators went on active service in German South-West, and after the finish of the campaign they came to Europe. Afterwards several of them were transferred to German-East, and in all these war areas they achieved considerable distinction.

THE COMPOSITE TYRE OF A GIANT GERMAN AEROPLANE.



Financially, the school was not a success, and there is a hiatus in the history of South African flying until Major Miller, D.S.O., R.A.F., went out there in October, 1917, with two B.E.2c. machines. This officer's idea was to make an educational tour, and he planned a very ambitious itinerary which would have embraced every village in the Union and Rhodesia.

Unfortunately, he met with bad luck from the start; ill-health and bad weather. In the Transvaal, where the weather is usually so fine, Major Miller was held up by a long spell of torrential rains, which made the roads impassable, so that his transport could not follow him up, had he attempted to tour. In a country such as South Africa it is necessary to prepare for emergencies by transporting by car all articles that may be needed.

However, by visiting the Cape, Free State, Transvaal, and Natal, he has done a lot of good. The results of the shortened tour are best summarised by saying that Major Miller has enrolled 1,300 recruits, collected £13,000 for the R.F.C. Hospitals, and has a promise of a contribution of £10,000 per annum from collective centres in the Union.

This officer's flying visits have indirectly produced a very notable effect on the native mind. They have once more produced that sense of a hopeless handicap which was one of our most formidable defences against the warlike restlessness of the more savage tribes, in days when the assegai was his only weapon, and a temporary success by surprise his only hope, to be followed inevitably by defeat and retribution.

The native has now resigned himself to the rule of the white man, as can be seen from the words of a native boy, who, speaking to his former mistress, after seeing Major Miller's performances, said:—

"... But we have lately seen the flying man who went through Swaziland faster than the wind, and we are told that there are in your army hundreds of men like that who carry guns with them in their machines, and can shoot you when hiding among the rocks or in the bush, or when galloping away on the fastest of horses. What use, then, would it be for us to fight against the white man? We are finished."

Major Miller's tour contained no notable incidents. At first he had a lot of trouble with his engine, an early R.A.F., and only skilful piloting saved a couple of crashes. At Port Elizabeth, owing to a badly chosen landing ground on the golf course, and also owing to the crowd, he landed in a side wind, hit a bunker, and stood the machine on her nose. But the damage was comparatively slight. Although he made several other forced landings, that was the only one which resulted in any damage.

The mileage for the tour was considerable but actual figures are not at hand. Major Miller, one understands, has returned to England.

Generally speaking, the South African air is unsuitable for flying on slow machines, owing to the pockets and other things.

One is indebted to Mr. J. W. G. Gordon, of the "Johannesburg Star," for the information.—R. M.

AERIAL MESSENGERS FOR THE PEACE CONFERENCE.

The "Times" correspondent writes from Paris on Dec. 3rd:—

Arrangements are now being considered in order to ensure the rapid transmission of newspaper dispatches dealing with the Peace Conference. The telegraph lines appear still to be unable to deal with the normal traffic, and telegrams are subject to great delay.

A regular aeroplane service, which will be available for newspaper correspondents' dispatches twice daily, is being contemplated.

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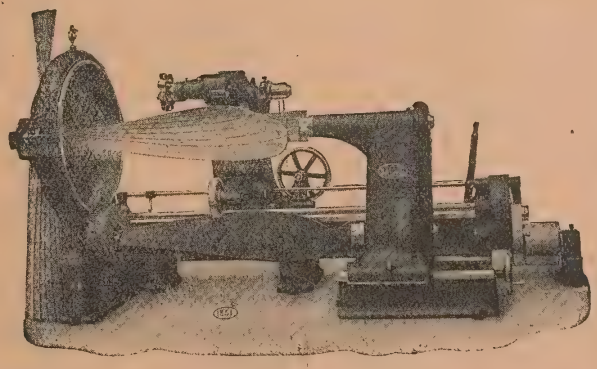
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THE R.A.F. CLUB.

It appears that the lot of the R.A.F. officer in the matter of his club, or clubs, is not to be so hard as was indicated in a recent note on this subject. It is said that a recent meeting at the R.F.C.. Club to protest against being closed down made up in energy what it lacked in numbers, and that the meeting was finally assured that the R.F.C. Club would be, if at all possible, kept open as temporary premises for the R.A.F. Club until a more suitable building is ready.

There seems to have been a good deal of misunderstanding over the whole business, and the people who appear to be most to blame are the Committee of the R.F.C. Club who failed to keep their members informed as to the intentions of the Temporary Committee of the R.A.F. Club.

So far as we can gather, Lord Cowdray placed his generous gift in the hands of certain trustees, senior officers of the R.A.F., for the formation of an R.A.F. Club. The money was never given to, or intended for, the R.F.C. Club, though the Committee of the R.F.C. Club has been consistently consulted about the new Club. These trustees appointed a Temporary Committee, who are under pledge to resign within a month of the opening of the R.A.F. Club, so that the members can elect their own Committee.

This Temporary Committee is doing its best to find a suitable house for the great new Club, for it is evident that the Bruton Street house cannot accommodate the R.N.A.S. as well as the R.F.C. Moreover, one gathers that Lord Cowdray wishes the new Club to be very comprehensive in character, and it is hoped that membership will not be limited by the snobbishness of a clique in the Club itself.

Certainly it seems ungraceful, when a man has been considered worthy to hold the King's Commission, and has been thought good enough to eat and sleep and play and fight beside one on active service, to say that he is not good enough to join the same Service Club. At the same time, one need not necessarily entertain similar sentiments towards people who have merely worked in the same office as oneself, so, in view of the fact that very many officers will be leaving the R.A.F., there is something in the jesting suggestion that all candidates for admission should be asked to attend before the Committee in plain clothes. One commends the attention of the Committee to the picture in last week's "Punch" of the wife who preferred the appearance of her husband in khaki. One can imagine some temporary Majors R.A.F. cutting a not dissimilar figure in plain clothes.

As regards the closing of the R.F.C. Club on Dec. 31st, which was the prime cause of most of the storm, it appears that Mr. Bersey, the founder of the R.F.C. Club, guaranteed its continuation for two years. The two years elapse on Dec. 31st, and as the Club has been run at a heavy loss—borne most generously by Mr. Bersey during that period—there was no alternative except to shut down at the end of the year unless the members were willing to have their five guinea subscriptions increased to something much nearer to 20 guineas.

Where the Committee of the R.F.C. Club evidently made a mistake was in not putting these facts so as to be clear to the meanest intelligence among its members.

Now, however, it appears that the R.A.F. Club, with the consent of Lord Cowdray, has come to the rescue of the imperilled R.F.C. Club, and is making arrangements to take over the Bruton Street premises and to elect the membership of the R.F.C. Club, *en bloc* to the R.A.F. Club. That being so, one fails to see where the R.F.C. Club members have any moan. They should, in fact, be very grateful to Lord Cowdray and to the Temporary Committee of the R.A.F. Club for getting them out of the hole into which their own Committee seems to have led them, for one cannot help thinking that, considering the enormous number of officers in the R.F.C., the Club could have been made to pay if it had been skilfully managed, instead of being run at a loss as seems to have been the case.—C. G. G.

THE DISAPPEARANCE OF THE AIR MINISTRY

According to the "Daily Express" of Dec. 18th, it is understood that the Air Ministry will come to an end in the course of the next few months, and that as a preliminary step the Lord Weir has already resigned his portfolio as Secretary of State.

The Royal Air Force, it is further stated, will in the future be administered by the War Office. No mention is made of the purely naval side of the R.A.F. nor of the Airship branch at present administered by the Admiralty.

There is little question that if this statement be true the great majority of the Royal Air Force and all those who have the principles of efficiency at heart will be pleased. The idea of the separate service for military aeronautics appealed to very few of those who took an intelligent interest in military affairs, and in practice it has proved that separation has not removed friction and intrigue, while a high and wasteful expenditure has been incurred with a marked decrease in administrative efficiency. In operations nothing has been achieved that would not have come to pass under the old régime.

The Air Ministry, in its brief existence, has had two Secretaries of State—the first, Lord Rothermere, who demonstrated with singular ability his total unfitness for the control of a fighting Service. He came heralded by the praise of an inspired Press, and he went unlamented by any. His successor, Lord Weir, has, on the contrary, shown that not all business men are failures as statesmen, and that unswerving rectitude and an unbiased mind are valuable aids in the career of a Secretary of State. Lord Weir will leave the Air Ministry with an enhanced reputation, and with the respect and admiration of all those who have worked with him or served under him. He realised that honour is the mainspring in a fighting Service, and his actions have shown his desire to animate all with a similar spirit.

After the above was written, the following statement was issued by the Press Bureau on Dec. 18th:—

"The Secretary of the Air Ministry forwards the following for publication:—

The statement that the Air Ministry is to come to an end is totally inaccurate. No such proposal is under consideration."

The "Daily Express," of Dec. 19th, makes the following comment on the Press Bureau communiqué:—

"The 'Daily Express' maintains the accuracy of its statements of yesterday morning. It is curious that the above denial comes from the Secretary of the Air Ministry and not from the Government, which has had the question of the Air Ministry under consideration. If our statements are incorrect, why is there no denial from the Government?

It is also a curious fact that there is no denial of our statement that Lord Weir has resigned his post."

A NORWEGIAN SPEED RECORD.

On Nov. 19th Lt. Dietrichsen established a Norwegian speed record by flying 620 miles in 8½ hours. This is as alleged by the non-technical Press.

R.C.A.S.

The correspondent of the Canadian "Daily Record" writes on Dec. 10th from Ottawa:—

A notice has just been issued by the Department of Naval Services ordering the demobilisation of the Royal Canadian Air Services. The need for coast protection, which was to have been met by these aviators, having disappeared, their training is to be discontinued, and cadets in this Service are now being brought back to Canada, where they will be demobilised.

There appears to be a general dislike of the plan to demobilise the R.C.A.S., and in certain quarters it is thought that this Service should be continued and applied to peace purposes.

The "Times" correspondent at Ottawa states that the R.C.A.S. was raised when the Canadian coast was threatened by German submarine attack. He also says that the Air Service is to be only temporarily demobilised until the spring, when the Government will issue their final decision.

The Toronto "Globe" of Dec. 10th, in advocating the continuation of the Canadian Air Force, says:—"In every military scheme hereafter, aeroplanes will be considered as necessary as artillery or rifles."

FROM ENGLAND TO INDIA BY AIR.

In continuation of the article published last week it is learned that the Air Ministry announce the landing at Calcutta of Maj.-General W. G. H. Salmond, G.O.C., R.A.F. Middle East.

The total distance of the route from Cairo to Calcutta, viâ Damascus, Baghdad, Bushire, Bandar Abbas, Charbah, and Karachi, is about 3,950 miles, the last stage, from Delhi to Calcutta, measuring about 750 miles.

It is also understood that the Handley Page machine, H.M.A. "Carthusian," piloted by Major A. S. MacLaren, M.C., R.A.F., and Captain Halley, R.A.F., in which General MacEwan is flying from London to India to take up an Air Force command in the East, has reached Pisa. The machine, which left England on Dec. 13th, has been delayed by bad weather. The aviators are on their way to Cairo, via Marseilles and Otranto and propose to continue their flight by way of Baghdad and Bandar Abbas to Karachi, and possibly on to Delhi.

THE BOMBARDMENTS OF PARIS.

The "Figaro," of Paris, recently published the following figures regarding the bombardments of Paris during the war:—

In 1914 the capital received 45 bombs, 17 of which were dropped on Oct. 1st. In 1915 70 bombs were dropped—62 on March 20th. In 1916 there were 61 bombs, and in 1917, 14. In 1918 there were 396 bombs, causing 1,211 victims, including 402 killed and 809 injured. The big guns fired 168 shells, killing 196 people and wounding 417. On March 23rd 21 shells from a "Big Bertha" were fired on Paris, and on Jan. 30th 89 bombs were dropped, causing death to 36 persons and injuries to 192.

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DRINK IN THE R.A.F.

The following letter relating to the absorption of alcohol in the R.A.F. is of interest:—

Sir,—Your views on the war are generally saner than those of our "glorious free press," and as you recently mentioned drinking among young officers, it set me thinking; and, although I may be wrong, there may be something in my theory. I quite agree that numerous "aperitifs" and liqueurs are very undesirable, especially for young men, but I do maintain that the nation which can keep up a regular supply of alcoholic liquor to its inhabitants will outstay a nation which does not, and thus win the war. The evidence is all in favour of this.

The meat-eating, liquor-drinking nations are top-dog in the world, and always have been. A few whisky-drinking Scotsmen practically run the whole of India, and wherever the Union Jack flies, the rulers and leading merchants and soldiers are generally drinkers.

If my history is right, China was a great nation until tea was introduced and ruined it.

When Russia was made "dry" at the beginning of the war its doom was sealed. A drinker will always fight, whatever else he may lack in character. Kitchener was known to be no teetotaller; but he, too, became an abstainer at the outbreak of war, and it cannot be denied that he was a disappointment in his post. Imagine Cecil Rhodes as a teetotaller. He would have been a nonentity as such. There is not a single great man in History who never drank alcohol. Imagine Cromwell, Drake, Nelson, Wellington, Pitt, Disraeli, or Gladstone as teetotallers—it is quite unthinkable. Fancy Nelson winning the battle of Trafalgar on China tea or Ginger Ale. The French Government has realised this, and the Poilu's ration of wine has been increased to 1 litre per day.

Von Hindenburg's drinking capacity is notorious; he is not a great strategist but he is a vigorous and successful personality. Imagine him or Bismarck asking for a lime juice and soda! Ludicrous.

The present dearth of really great men may surely have some connection with the general decline of drinking in these days. A people will stand any hardship if it can find occasional relief in drinking.

When a man is worried he often has a "booze up," and is all the better for it afterwards. So it is with a nation. If there is no outlet, it means strikes and idleness. In fact, the average striker nowadays is the young cigarette-smoking abstainer, or very moderate drinker.

The older generation is less irritable, because it finds solace in the public-house. I do not wish to advocate drunkenness at all, but I do say that prohibition at present would mean national disaster, and that a nation which takes a reasonable amount of alcohol is a better stayer than one which does not.

There may be many exceptions to my theory, which I have no time to elaborate here, but I would like to hear of one single great leader, or superman, who was a teetotaller. Of course, many great engineers and merchants abstain from liquor of any kind, but they are none of the personalities who will go down in History like Rhodes and others. The most successful British General in this war, General Maude, was practically a teetotaller, and it is significant that he should have succumbed so quickly to poison.

If food runs short alcohol is an absolute necessity. One can make a decent meal off bread and cheese and a glass of beer, or even a sandwich and a half bottle of wine.

I do not wish to convert any teetotaller, and if I had children of my own, I would certainly wish to have them teetotal, but not the nation, as a whole, as it would eliminate men of real genius. I am not much of a drinker myself, although I can stand my whack if needs be, and I do not see why one should necessarily practise what one preaches.

(Signed) MODERATION.

ONE VIEW OF THE MEDICAL BOARDS.

While all agree that the proper testing of would-be pilots and observers by capable medical men is highly necessary, and while it is equally necessary that active-service aviators should be properly tested from time to time to make sure that they retain the highest standard of physical efficiency, it is only fair to say that there is another view of the question, namely, that of the aviators themselves.

One of the hardest things in the world is to convince an unfit pilot that he is actually unfit. Pilots and observers have come home raging with anger because they wanted to go on killing Huns, and an unsympathetic doctor has sent them home because he decided that they were not fit to do so. Out of sheer curiosity one has oneself applied to some such aviators a few of the simpler recognised mechanical tests as to their physical efficiency, and, in every case, one has found them far away below the requisite standard for active service, so that one is inclined to believe that the doctors are generally right.

However, the pilots' own views are well worth having, therefore, one gives hereafter a letter from a "turned-down" pilot to a friend, which is not only amusing in itself, but may cause the Air Force Medical Service to consider whether the mere elaboration and multiplicity of their tests may not produce worse results than are fair to candidates. Many a pilot who would cheerfully face a dozen Huns in the air may be seized with absolute funk at having to face three or four grave-faced, high-browed doctors, while, at the same time, oppressed by the knowledge that his whole Service career depends on their decision—which itself depends on the state of their livers and the composition of their dinner and drinks the previous night. Many a man is more anxious about his career than about his life.

The letter mentioned runs thus:—

"It may amuse you to hear again that both 'B' and myself are temporarily unfit for flying—owing to our being unable to hold our breath for more than two or three hours without showing signs of distress. At least, as far as I could ascertain, that appeared to be the trouble.

"Probably, our toe-nails rattle as well—or something equally serious. At any rate, by the time the infernal Board had finished with us our impression was that we couldn't possibly have many hours to live.

"It is about the fiercest thing in medical exams. I have ever encountered. It lasts about four hours, and is calculated to reduce one to nervous prostration most effectively.

"The programme includes Russian dancing (which was another of my weak spots). I was unable to stand on one leg for more than three and a-half hours. This, as a matter of fact, didn't surprise me, since I was having a certain amount of difficulty in standing on two—owing to what I had had for lunch.

"Another feature of the entertainment was the number of times various jovial people wanted to know whether one had had delirium tremens or G.P.I., or both. I was asked no less than three times. Apparently, I look the sort of person who ought to have had them—unless, of course, it's merely the medical idea of starting a conversation.

"The outcome of the whole business is that we both have three weeks' leave, after which we have another Board.

"If we are then still unable to—

"(a) Stand on our heads for two or three weeks;

"(b) Scratch our left ear with our right big toe;

"(c) Speak Hebrew and sing in Grand Opera

—we shall be handed over to the Invaliding Board.

"However, before matters have reached that stage, I shall probably have told them that I am not an entomological specimen and shall have gone back to the P.B.I.; unless, of course, they will let me come out again as an observer."

Probably this humorous young gentleman is really quite unfit to fly for the time being, but one does suggest that a little less pure mechanical routine and elaborate mechanism, and a little more human sympathy, would possibly produce better results on test, and might retain some valuable people in the Air Force.

GRADING AIRMEN.

AN AMERICAN INNOVATION.

BY "MASCOT."

Air work disorganises the operations of the human machine in a most peculiar manner. Even the mere necessity for a continuous exercise of the sense of balance—a more or less artificial sense which has to be acquired and developed—has an obscure effect upon aviators.

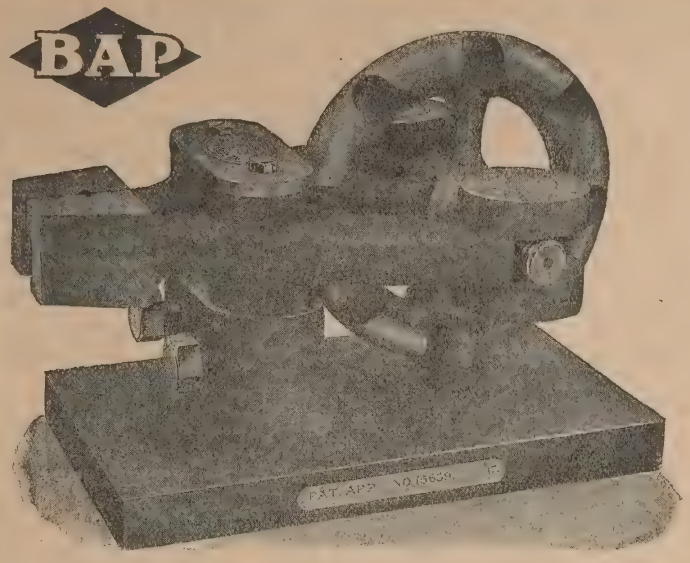
The change from land to air conditions exercises a subtle influence upon the nervous system and imposes a strain upon the heart, the lungs, and other organs, which is far from generally understood, and calls for a peculiar branch of medical research.

America has gone ahead in this important matter, and experts have determined upon a standard examination, by means of specially devised apparatus, for classifying pilots. All men who have won their wings in the U.S. Air Service are required to undergo tests periodically to establish their physical and mental fitness, and particularly to indicate at what heights they are in a condition to fly.

In the early tests the pilot was placed in a steel air-tight cylinder, from which the air was gradually exhausted and then replaced to simulate a flight into the rarefied air of high altitudes and back to earth. To-day he sits comfortably in the same room as his examiners. His nose is clamped so that he cannot breathe through it, and over his mouth is placed the breathing apparatus, which is connected by tubes with a tank of measured air, and with instruments that record every breath he takes.

As fast as he exhales the air is taken into a reservoir, where it is cleared of carbon dioxide before returning to the tank. Gradually, he uses up the oxygen, and thus air conditions of high altitudes are duplicated. The higher one goes up the rarer becomes the air. After a certain time the man undergoing the test has consumed an amount of oxygen which leaves the remaining supply equal to the oxygen available at a certain altitude. In the test time takes the place of height.

The man under a test is kept fairly busy, just as he would be piloting an aeroplane. Before him on a table is a bank of small electric lights, one or another of which flashes every five seconds These



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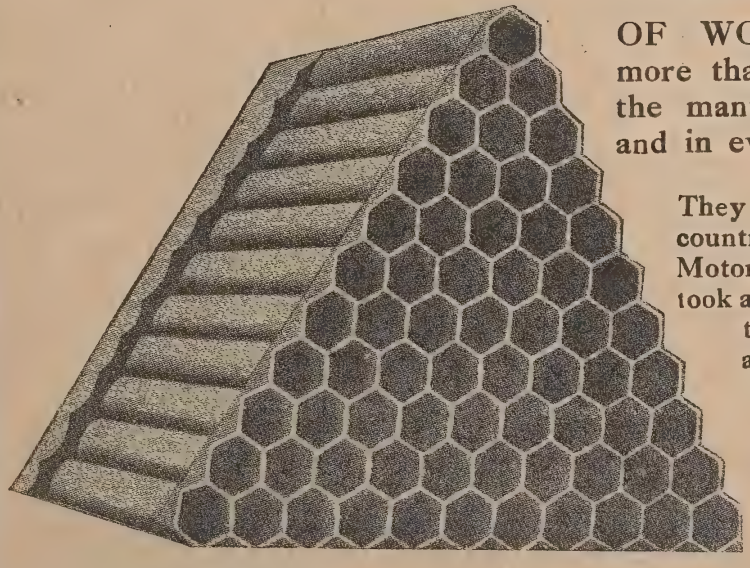
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During the War, this Firm have been by far the largest and most reliable Makers of Aeroplane Radiators, and those who want good work are invited to communicate with them.

he must extinguish as fast as he observes them by touching one of a set of buttons corresponding with the lamps. Two examiners watch him constantly, and check his errors or delayed actions.

Another instrument before him is an ammeter, which acts similarly to a speed dial on an aeroplane, and accordingly must be kept at a constant point. He has also to keep a small electric fan at a uniform speed, judging by the hum of the motor.

His every movement is noted and recorded by the examiners, who see if his heart, lungs, and eyes accommodate themselves to the altitude.

As time goes on (and the test lasts for about thirty minutes) the pilot becomes a bit groggy or sleepy from lack of oxygen, just as he would at the corresponding altitude, and his condition becomes manifest in changes in the action of his heart, eyes, ears, and brain. Towards the end of his run he may let the motor slow down, forget the ammeter entirely, or miss hitting the light buttons. But he is immediately released when his heart shows strain or his pulse or respiration becomes too far from normal.

A few minutes after his release from the apparatus all signs of his recent fatigue pass away, and he becomes normal again. But a very important record has been established, his future safety practically assured, and he himself feels that it would be absurd, in view of the facts shown by the tests, for him to try to fly out of his level.

In conclusion, it may be said that there are now four classes of pilots in the U.S. Air Service. Those few who can endure an altitude of over 20,000 ft. without undue fatigue are in Class A.A., and are designated to fly pursuit aircraft planes when they reach the front if they keep within the class in future tests.

The men who can stand the work at 15,000 to 20,000 ft. are in Class A; from 8,000 to 15,000 ft. in Class B; and those from ground level up to 8,000 ft. in Class C.

WHY?

The Montreal "Star" states that in accordance with the rules laid down by the United States aviation authorities, hockey will be barred as one of the games in which members of their flying squadrons can take part.

The men in charge believe in proper physical training for their soldiers, but do not look with favour upon hockey, or Rugby for that matter, although the boys have been allowed one or two games of the latter.

The flier needs a perfect nose and breathing apparatus, and one good hard Rugby tackle or one foul blow with a hockey stick might ruin a flying man's career.

THE PARACHUTE CAMPAIGN.

Considerable interest is being evinced in the United States concerning the potentialities of the parachute as a means of saving the lives of aviators who get into trouble while flying.

The "Air Service Journal" (New York) for Sept. 26th devoted a leader to the subject which supports many of the views concerning parachutes recently expressed in THE AEROPLANE.

The "Air Service Journal" lays stress on the advantages which a "soaring type" parachute, which would draw an aviator upwards out of his seat, would offer over the "dropping type" now commonly employed, in which it is necessary for the aviator to fall faster than the aeroplane in order to effect his release.

The journal records a fatal accident to an American named Leon Molas who was recently killed while making an experimental drop from an aeroplane. The type of parachute concerned is not known, but as in the case of the fatal accident in this country to young Mr. Boyle, the accident was not the result of the failure of the parachute, but the cause was the breaking of an attachment which connected it with the aeroplane.

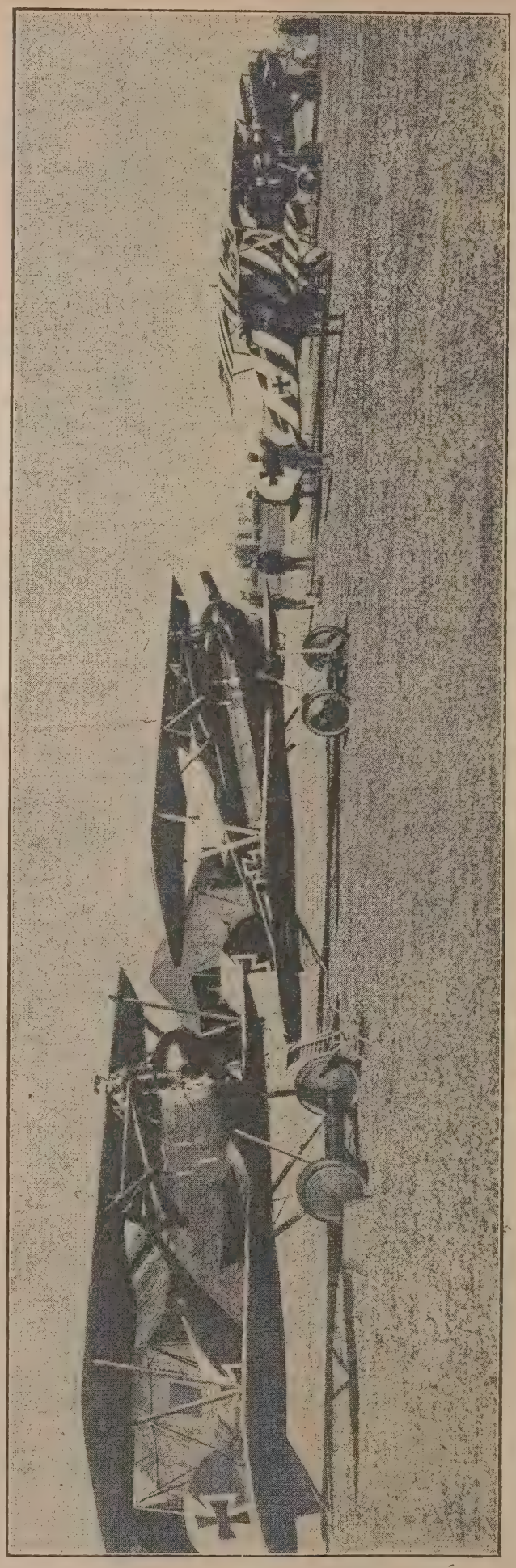
These accidents emphasise the necessity for the most searching investigation into the nature of the shock load sustained by parachute attachments, which load is caused by the check in the aviator's fall when the parachute commences to be pulled open. In one case it requires a static load of 600 lbs to commence the opening of a parachute. As this initial operation is almost instantaneous, the great shock load can be imagined.

It should not be difficult to evolve parachute attachments sufficiently strong to withstand any load which can possibly be imposed upon them, and the removal of all risk of failure on this account should do much to remove the prejudice which certainly does exist to the detriment of this extremely useful life-saving aparatus.—W. L. W.

PARACHUTES IN THE GERMAN ARMY.

A neutral correspondent writes:—

The first report of the German use of parachutes among aviators referred to a burning Fokker scout, being left in mid-air by the pilot by means of a parachute. Whether this incident referred to the present leader amongst German star turns is, of course, beyond the possibilities of ascertainment, but it is a fact, told in the German aeronautical press, that Lt. Udet is only alive still thanks to his parachute, as his aeroplane was shot afire in a fight. He could not jump till in an altitude of 2,400 feet, and his parachute entangling in the fin stern post he did not get clear until only 1,200 feet above the ground. Thus the parachute had but just time to open, the violent ground-touching of the speedy drop resulting in the pilot spraining one of his feet.



A GERMAN CHASER SQUADRON: A photograph taken before the Armistice of an Albatros Chaser Squadron. The "sugar-stick" painting of the machine to the right is noteworthy.

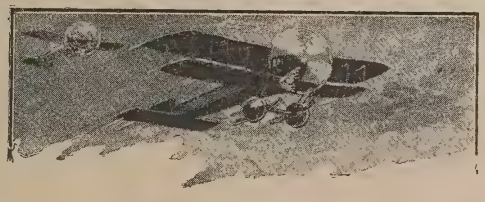
The Struggle Over—

and in the calm that follows we realize more fully the destructive influence of war and the imperative need for concentrated effort in the rebuilding of the Empire's commerce.

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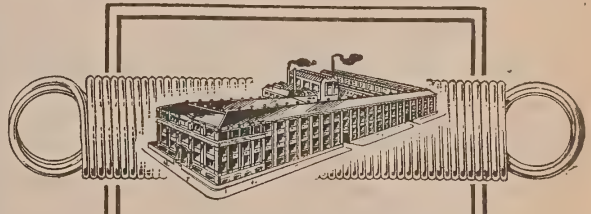
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IN THE EARLY DAYS.

These are the notes of a wanderer, one who has always been interested in the picturesque side of aviation, and who has watched its gradual growth and development in various countries since those good old days when a little band of pioneers were making effort after effort towards the goal which they finally achieved.

* * * * * *

It was a sunny July afternoon, in 1909, when I was first initiated in the mysteries of an aerodrome. We motored from Chalons along one of those delightful poplar-lined French roads through the hamlet of Mourmelon, and out on to the vast rolling plains of Champagne, where France's greatest aerodrome in those days was situated.

It was the Mecca of Aviation then; one saw there men from all parts of the world interested in flying, inventors with strange looking motors and still stranger aeroplanes, correspondents of the great newspapers of London, Paris and New York, a motley crowd, but a very sporting one at that.

Outside the sparse line of brown hangars bearing the names of the famous pioneers, Farman, Voisin, and others, were two of those quaint biplanes like great clumsy box kites with their planes sectioned by vertical curtains; the French used to call them cellules.

The man of the hour at the camp was Jean Gobron, a young fellow known in the motoring world. As we drove up he was about to start off with a passenger on board one of the Voisins, a feat considered wonderful in those days, when such things as Sikorskys were not even dreamed of.

The mechanic had swung the metal propeller and the motor, a strange contrivance with cylinders arranged in the form of a Maltese cross, was roaring ferociously. "Lachez tout!" shouted the pilot, and the box kite lumbered over the uneven ground for several hundred yards, then rose into the air—certainly not gracefully, but nevertheless everybody shouted and threw their hats (or someone else's) into the air. One's first glimpse of an aeroplane in flight is a never-to-be-forgotten incident in one's life.

A few minutes later four sweating mechanics plunged into the black recesses of a hangar near by and began to drag out one of those graceful Antoinettes which we were all waiting to see. Somehow these monoplanes always seemed to captivate the women folk. "Ah," they exclaimed. "How beautiful—just like a bird—*ça doit voler bien*!"—but this particular one didn't nevertheless.

The aviator, after testing the sputtering motor for fully twenty minutes—they were very cranky those Antoinettes, you remember—climbed up, and off he went, circling up to several hundred feet, a stupendous height it seemed.

Hearing a great commotion in an adjoining shed, we turned around to see another Voisin being wheeled out, followed by an imposing figure in full flying dress, who was giving orders right and left. A chauffeur jumped up excitedly, "*Fournier*!" he cried. "*Le grand Fournier*!" Yes, it was he of automobile racing fame, learning to use his wings. After elaborate preparations, he climbed in and the box kite was soon gaily jolting over the field after the fashion of a traction engine, for it must be admitted that Fournier was a good load for the fickle aeroplane of those days.

And now the Antoinette, which had been placidly rounding the pylons, suddenly baulked, and pointing her nose downwards crashed to earth ingloriously. The pilot clambered out and ruefully surveyed the splintered propeller. "*Nom d'un chien*! *Ca fait deux aujourdhui*," he was said to have remarked. Oh, the high cost of flying!

Visible in a near-by hangar was a weird-looking triplane; its owner was planning a great future for it, amongst other things a cross-Channel trip. I heard that it made the trip eventually, after long delays—but in the hold of a cargo steamer. Anyhow, it was not a frequent flier, although, as one lady put it, it was *rather* pretty and *so* nicely made.

As we motored away from the field a great shout arose from the group of people standing near the hangars: "*Bravo*! *Bravo*!" they cried, for the wheels of Fournier's biplane were fully three feet off the ground!

* * * * * *

Motoring on to Vichy a week later I came upon the "*Grande Semaine d'Aviation*," which was being held in a meadow on the banks of the River Allier. The world of fashion was there on the green *pelouse*, and the success of the meeting was Tissandier, the great balloonist, who stayed up for over two hours on a Wright biplane. The launching from the catapult was watched with trepidation by the crowd.

A few days later Paulhan arrived with a mysteriously crated Voisin. It was rumoured that the aeroplane was fitted with a new type of motor, and the public's curiosity was aroused. And sure enough when the biplane was wheeled out of its shed one sunny morning the motor on it was seen to be of an entirely new type, and Paulhan was said to have great hopes for it.

Certainly, the box-kite flew remarkably well on its first trip over the meadows, and Paulhan, growing confident, headed out towards the swiftly flowing Allier. Unfortunately, just as the biplane was over the very centre of the river the motor stopped dead, and down he went for a cold morning plunge. They say he came up smiling and still faithful to his new engine.

Those were the happy days!

"IN THE AIR": A REVIEW.

"In the Air," by Lt. Bert Hall, of the French Flying Corps (Hurst and Blackett, 2s. 6d.), is not a book at all. It is a breezy conversation with a fighting man, a long-limbed dangerous Yank, with a never-failing fund of natural humour.

The style is so superbly natural that you seem to hear the living voice. This man enlisted four days after the outbreak of war, went through the hell of 1914, joined the Lafayette Escadrille, flew in Rumania and Russia, and was decorated right and left, but it is only incidentally that you hear of his own performances. He is thinking all the while of his pals, some dead, some living, and some but half alive. "Very intelligent, energetic, and audacious," says Marshal Joffre of this American volunteer, 37 years of age. Steeplechaser, automobile racer, aviator, he evidently did not believe in living by halves.

He joined the Foreign Legion, where his fighting partner (the Legionaries scrap in pairs) was a bad hat who had spent nine days out of gaol in eight years. For months they foot-slogged: "Bill Thaw suffered most under the 70 lb. load. His feet were swollen up like Zeppelins, and they were not like Cinderella's feet at the beginning, either. But he stuck it out, game old Bill." They were plagued with insects. Bert, a man of resource, put on three shirts. When "they" got well assembled on the inner one he would put it on the outside. "This kept them hustling to make the trip down and up on the inside, which took them almost an hour. I would sleep during this time." Washing was not. Somehow the coffee did not appeal to Bert, so he shaved with it. As a kitchen detail fetching loaves he had a lively time. "If you slipped and fell, a hundred and fifty men didn't eat." The loaves weighed two pounds each, and there were 75 of them. "You never know what you can do till you try." They had no drugs. Burying the dead was rather a fag, so they used to cut a notch in the bank and bury them upright.

Norman Prince organised the Lafayette Escadrille, and Bert went over. They got a batch of Nieuports and set out to see life. "Our first interview with the commander made a deep impression on the boys. We walked into his office as he was putting eight war crosses into little boxes. He cordially remarked: 'I am sending these to the families of the eight men I had killed in my last bombardment.' I guess some of the boys commenced to think that very soon their families would be receiving a small box also."

Bert soon got into his stride, and brought down "a sassy German." The Hun endeavoured to set fire to his machine—"I only had an instant to think, so I hit him under the jaw, and out he went. Very soon a number of French soldiers arrived and the two Germans were taken away. This officer was highly insulted because I had struck him with my fist. I could not impress upon him that I had done it out of politeness, as I could have shot him just as easy, but he could not see it that way."

Their machines were numbered, so that slackers would be reported by other members of the squadron and transferred to the infantry. It does not seem that anyone got a chance to take Bert's number. He was busy all the while.

"Suddenly there was a rat-tat-tat behind me. One look was enough. Two machines had come up and opened fire on me. I opened fire on one, but could not see if my bullets were going into the body of the machine. As I pulled away I noticed some red blotches on the wings of my 'bus, and knew that I had made a hit. It showed me, also, how close we had been to each other. The propeller revolving in front of the observer had spattered the blood on my wings. This proved that he was wounded in the face or neck. If it had been a body wound the blood would have flowed down to the boots inside the leather clothes, which are waterproof."

But it is only incidentally that the excellent Bert makes your flesh creep, he does not aim at effect. Getting lost behind the enemy lines, he noted the direction in which the big guns were pointed, and so won home. They shipped him to Russia to train pilots. He gives a pretty picture of that home of the free. When he went up and assassinated a Boche aviator, the prudent pilots of the vicinity gave him a decoration and implored him not to do it again, as it would provoke reprisals in kind. Hitherto the place had been absolutely calm, and his hosts breathed sighs of relief when this firebrand had departed. He didn't understand limited forms of warfare.

He gives an extremely lively chapter on the French marraines, the unofficial god-mothers of the soi-disant "lonely soldier," and he describes the Rumanian officers acridly, with their corsets and painted faces. His squadron adopted a baby lion, whom they nicknamed "Whiskey." They put the infant to play with a litter of puppies, and he became quite amicable, "as I say he doesn't know he is a lion. He thinks he is a dog."

A gay book, with no "fine writing" to mar it.—R. H. B

A PROPHECY.

From a leading article in The Aeroplane of December 5th, 1912 :—

"The question of the armament of fighting aeroplanes . . . opens up a whole new field to small-arms manufacturers. Presumably the sheer barbarity of fighting in the air will automatically abolish the decrees of the Geneva and all other conventions which have dealt with international laws of war, and one will use expanding and explosive bullets without objection.

"Why one may disintegrate a dozen men or more with a shell, and not dismember one with an explosive bullet, is rather hard for the lay mind to grasp. Certainly explosive bullets would be useful against a dirigible, as one might, with luck, set the whole thing alight, and if one of these bullets happened to hit one of the crew instead, the inhumanity of the act would scarcely be greater than that of bringing down the whole thing with a shell.

"War in the air is going to be very brief and very ghastly, therefore the better we prepare for it now, the less it is going to cost us in money and human agony in the future. The worst possible thing we can do is to prepare a little insufficient, if not inefficient, air corps, with a reserve of half-trained pilots who will be sent off at intervals during a war to fill the gaps caused by casualties.

"This policy, which seems to be the policy of to-day, is merely a way of increasing the expense in men and money without doing any one any good. If we are to have an air corps at all, it must be bigger and better than that of any possible enemy. The naval policy of two keels to one is no more essential to the safety of the nation than is an aerial policy of two wings to one."

[Considering that the passages quoted above were written nearly two years before the war, and over five and a half years ago, they were not a bad prophetic effort. If those in authority had regarded them seriously we should be in a far better position to-day. Perhaps the nearness of those prophecies to the actual happenings of two, three, and four years later may induce people to take the prophecies of to-day as being more worthy of notice.—C. G. G.]

THE BIRD AND THE PARACHUTE: OR THE NEW FIELD PUNISHMENT.

At the end of February this year, when war was at a standstill, it happened that a certain heavy gun brigade H.Q. decided to put up at a certain farm not many miles from the line near La Bassée. The C.O.'s office was situate, owing to lack of space, in a certain cubby-hole arrangement next door to a hen-roost.

There was one cock in this hen-roost which crew from morn to eve with so shrill and piercing a crow that it entirely incapacitated the C.O. from any work whatsoever.

He therefore, being in frivolous mood, decided that the said bird be court-martialled forthwith. Accordingly the court-martial assembled, consisting of the C.O. as president and a major and the orderly officer as the remaining members. A proper charge-sheet was drawn up, which was a somewhat amusing document, and witnesses were produced who swore on oath that this evil bird had, wilfully and intentionally, frustrated all attempts on the C.O.'s part to deal with the intense paper barrage put down by Corps H.A.

The Court was then cleared and, having reached its decision, the cock was brought in, stridently protesting, to hear sentence passed. This was that he be attached to a special parachute made to fit him, and then dropped from a kite balloon from 500 ft. The nearest K.B.S. was accordingly informed, and next morning, bright and early, along came the K.B. on a lorry, plus the section officer, who also brought the parachute.

By this time news of the proceedings had spread somewhat, and a crowd of at least 30 officers and a goodly number of men had arrived to see the sentence carried out. The parachute was attached to the brute and he was taken up to the regulation 500 ft. and dropped into space. He came down about 10 ft. per second, yelling like Hades, gently swaying from side to side in the wind, with both legs and wings going like clockwork. Arrived on the ground some little distance away, he suddenly shot up and stood stock still considering. Then, suddenly realising what a blithering fool he had made of himself, he ran at full speed for the roost, the parachute still attached, and occasionally filling out as the wind took it and lifting him off the ground in little jumps about four feet at a time, his legs still going at top speed.

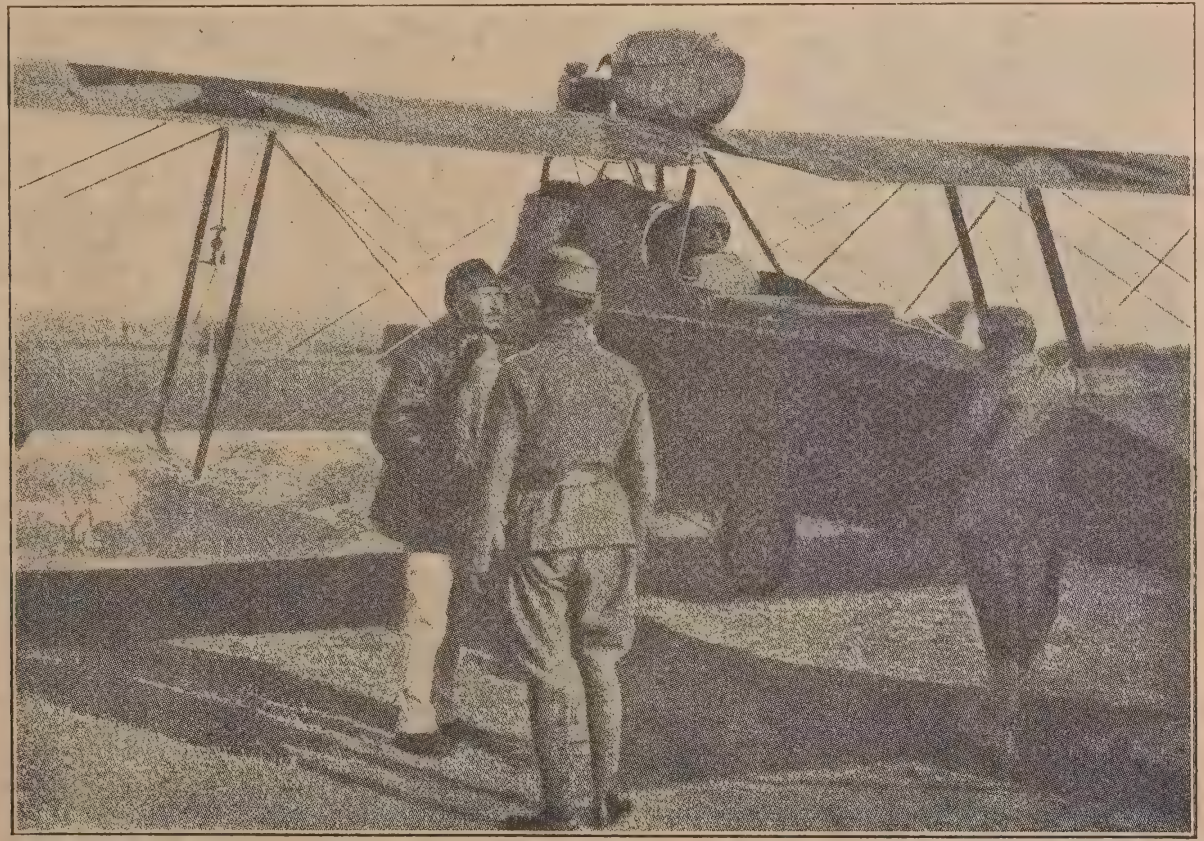
The punishment had the desired effect. Little more was heard from that bird the remainder of the time the brigade H.Q. was stationed at the farm.

AN AIR SERVICE CLUBS' ASSOCIATION.

The Air Service Clubs' Association, an organisation similar to the Infantry, Cavalry, and Field Artillery Associations, has been formed and will maintain headquarters at Washington. The object of the Association will be to promote the efficiency of the Air Service, disseminate professional knowledge, and provide means for social activities at all places where members are stationed.

Commissioned personnel of the various branches of the Air Service, of the Army, Navy, and Marine Corps, civilian personnel occupying positions of chiefs, and foreign officers on duty with the Air Service are eligible to membership in the Association.

The cost of membership for the first year is $10. This includes cost of initiation and dues for one year, all publications, and gives privileges of all the leading aero clubs.



An Austrian General Officer lately commanding troops in Servia who, before the Austrian defeat, regularly travelled over the Balkans by air to avoid the bad roads.

TO THE FIRST AVIATOR.

The verses which follow hereafter are taken from the "Times" of July 18th. The translation, by Major the Hon. Maurice Baring, R.A.F., should be an example to the would-be poets of the R.A.F. of how this should be done :—

ICARUS.

(Translated from the French of Philippe Desportes.)

Here fell the daring Icarus in his prime,
He who was brave enough to scale the skies;
And here bereft of plumes his body lies,
Leaving the brave all envious of that climb,
O rare performance of a soul sublime,
That with small loss such great advantage buys!
Happy mishap fraught with so rich a prize,
That bids the vanquished triumph over time!
So new a path his youth did not dismay,
His wings but not his noble heart said nay;
He had the glorious sun for funeral fire;
He died upon a high adventure bent;
The sea his grave, his goal the firmament;
Great is the tomb but greater the desire.

MAURICE BARING.

ICARE.

Icare est chut ici, le jeune audacieux,
Qui pour voler au ciel eut assez de courage;
Ici tomba son corps dégarni de plumage,
Laissant tous braves cœurs de sa chute envieux.
O bienheureux travail d'un esprit glorieux,
Qui tire un si grand gain d'un si petit dommage!
O bienheureux malheur plein de tant d'avantage,
Qu'il rende le vaincu des ans victorieux!
Un chemin si nouveau n'étonna sa jeunesse,
Le pouvoir lui faillit, mais non la hardiesse;
Il eut pour le brûler des astres le plus beau;
Il mourut poursuivant une haute aventure;
Le ciel fut son désir, la mer sa sepulture:
Est-il plus beau dessein, ou plus riche tombeau?

Mr. Sydney Lee, writing in the "Times," says:—"Early in the sixteenth century—more than 50 years before the French poet Desportes [late sixteenth century] began to write—Jacopo Sannazaro, of Naples, who was famed as soldier as well as poet ("tomando ora la espada ora la pluma"), penned the original of Desportes's elegy on the young Greek father of the art of human flight. Sannazaro's best known work was the pastoral romance (in mingled prose and verse) of "Arcadia," which Sir Philip Sidney, another soldier-poet, imitated in Elizabethan English. But Sannazaro's melodious lyrics have a wealth of spontaneous fancy which has given them enduring life in their own country. Sannazaro's "flying" sonnet runs thus:—

Icaro cadde qui; queste onde il sanno,
Che in grembo accolser quelle audaci penne;
Qui finio il corso, è qui'l gran caso avvenne;
Che darà 'nvidia agli altri, che verranno.
Avventuroso, è ben gradito affanno,
Poi che morendo eterna fama ottenne:
Felice, chi in tal fato à morte venne;
Che si bel pregio ricompensi il danno.
Ben puo di sua ruina esser contento;
S'al ciel volando à guisa di colomba
Per troppo ardir fu essanimato, è spento.
Edhor del nome suo tutto rimbomba
Un mar si spatioso, un' elemento:
Chi hebbe al mondo mai si larga tomba?

The sonnet is numbered lxiii. in the collection of Sannazaro's "Sonetti è Canzoni," appended to the Aldine edition of the author's "Arcadia," (1533). I make the transcription from my copy of this volume.

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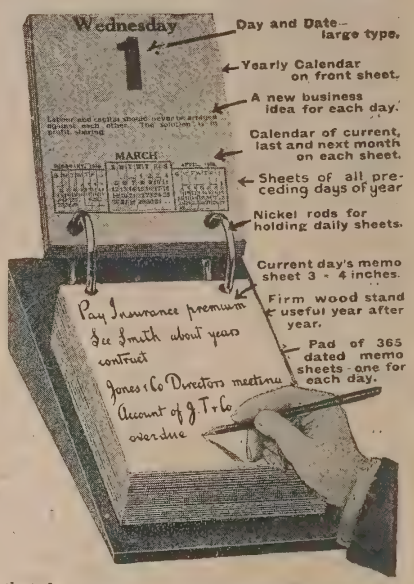
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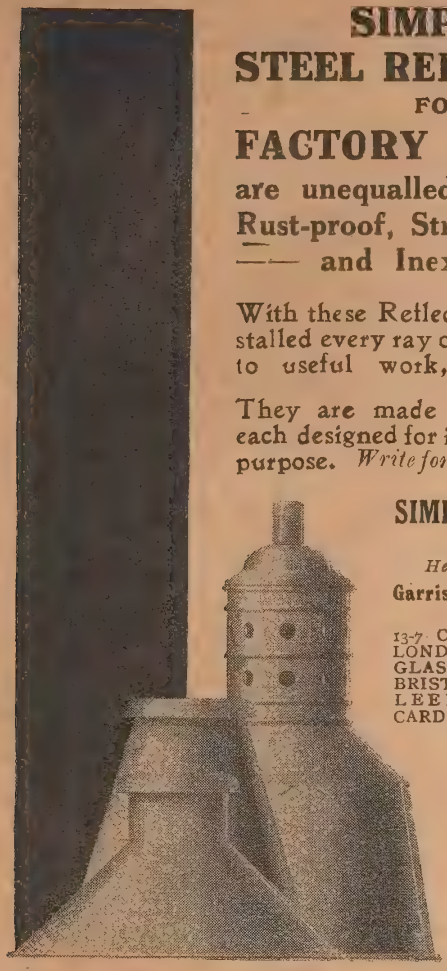
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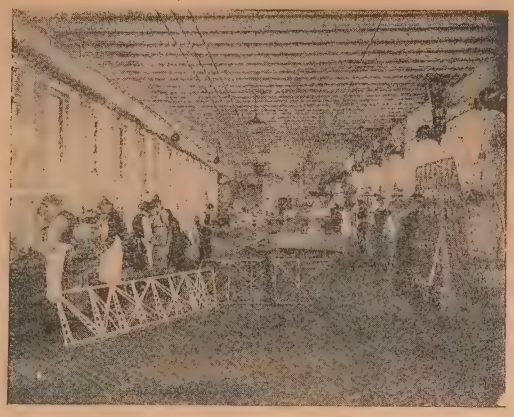
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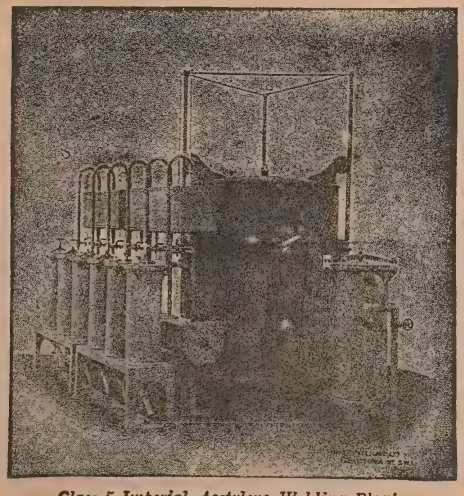


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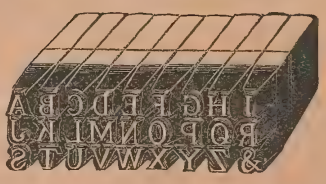
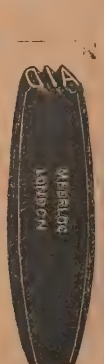
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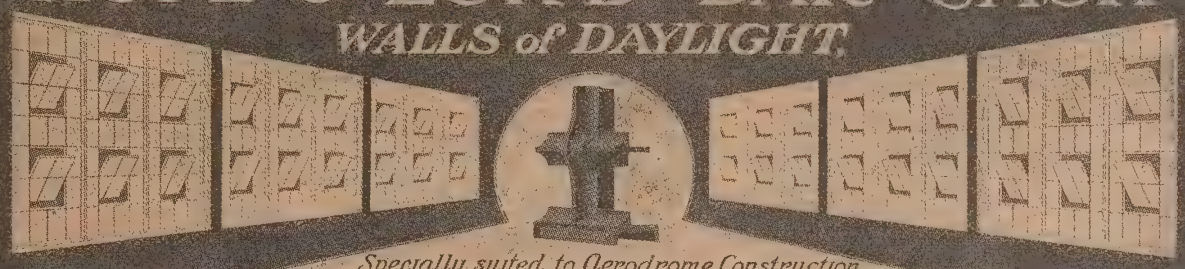
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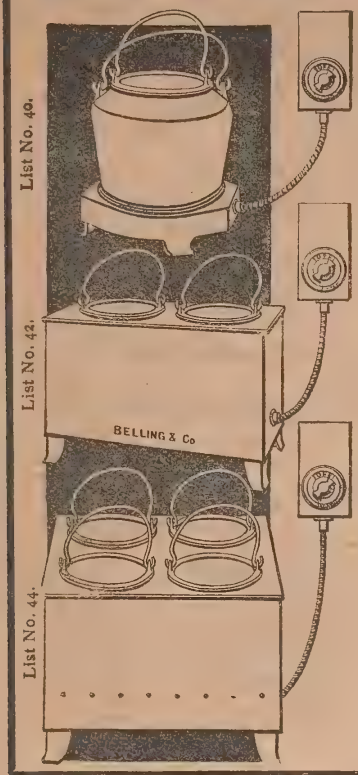
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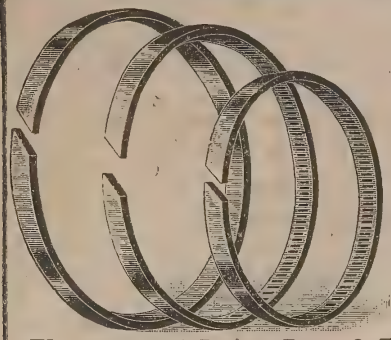
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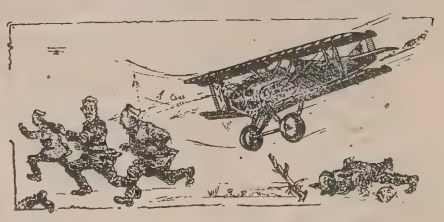
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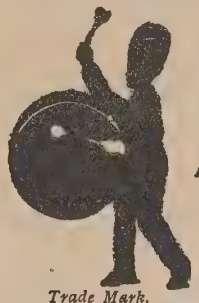


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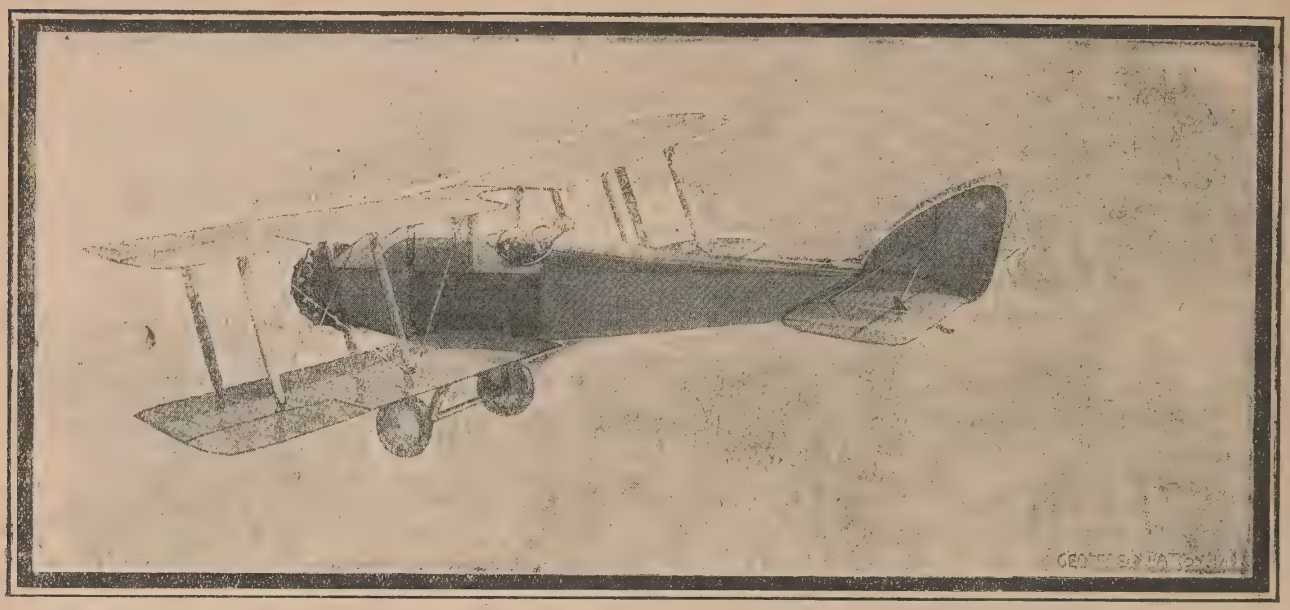


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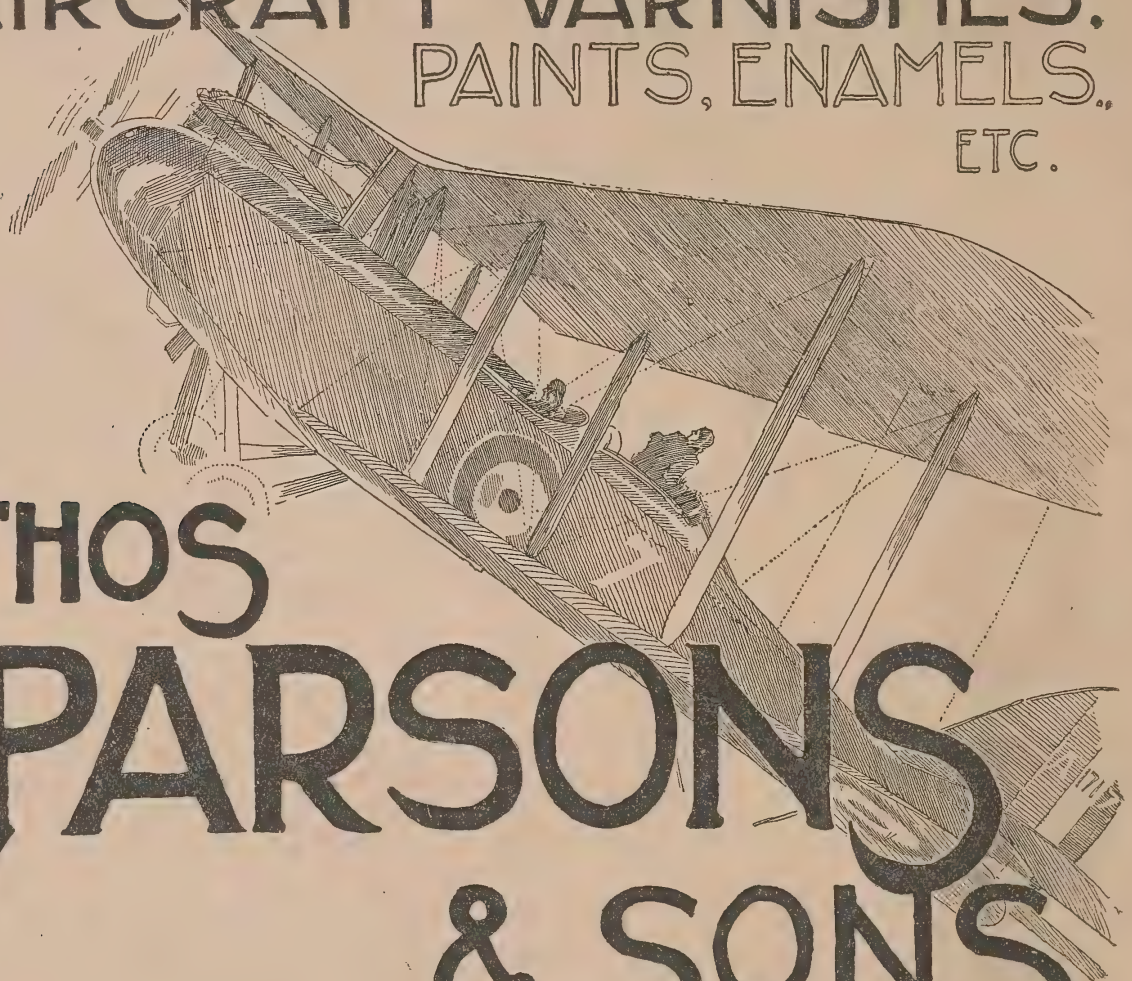
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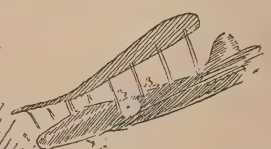
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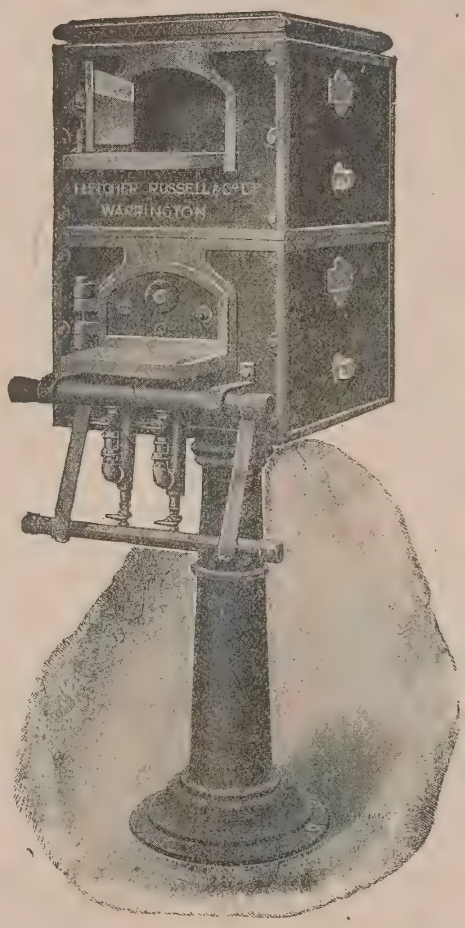
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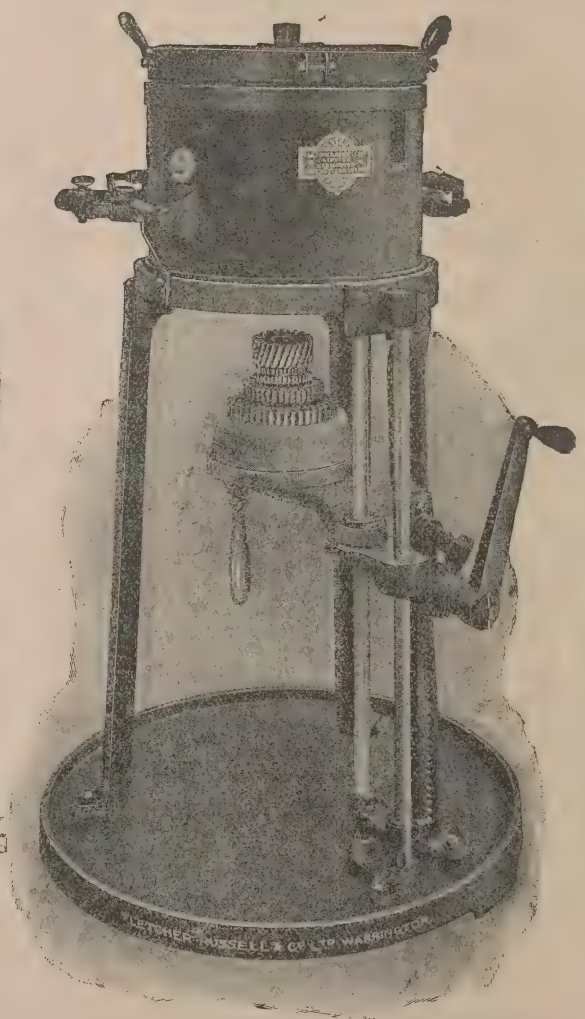
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ON CIVIL AERIAL TRANSPORT.—III.

TECHNICAL AND PRACTICAL QUESTIONS.

When one comes to deal with the Reports of Special Committee No. 2, that dealing with "Technical and Practical Questions as to the Possibilities of Performance of Aircraft, and as to the Requirements of Aerial Services," one is on more familiar and on more certain ground than when dealing with International Law, for, after all, International Law is only what the biggest bully or the most numerous mob of allies among the nations chooses to make it, and either is equally likely to be unjust or tyrannous. The difference between a bully and a mob is only a difference of brute strength.

Practical questions of aeroplane performance are, however, within the ken of most of the readers of this paper—though apparently outside the ken of a good many of the Main Committee which was called upon to approve or disapprove the findings of Special Committee No. 2. Therefore one can discuss Chapter II of the Report with greater certainty than Chapter I.

It is considered preferable to deal first with this chapter of the Main Committee's report, and to do so paragraph by paragraph, rather than to deal with the Special Committee's Reports known as Appendices II and III, as these are of great length and must be discussed separately, whereas Chapter II, which is the main Committee's Report on these Reports, is so self-contained as to be quite clear without referring to the Appendices. Chapter II begins as follows:—

CHAPTER II.

TECHNICAL AND PRACTICAL QUESTIONS AS TO THE POSSIBILITIES OF PERFORMANCE OF AIRCRAFT, AND AS TO THE REQUIREMENTS OF AERIAL SERVICES.

1. The reports of Special Committee No. 2*, which are primarily concerned with the practical possibilities of aeronautics from a scientific and technical point of view, are in the main of so highly technical a character as to make them unsuitable for detailed examination in this Report. Attached to them will be found a series of appendices, the general effect of which has been summarised, so far as it appears possible to summarise it, by the Special Committee. We desire to record our view that the detailed reports contained in these appendices represent the results of much experience and of much research by those most competent to express authoritative opinions on the subjects with which they deal, and that the conclusions at which they arrive are based upon the most reliable data ascertainable at the present time.

2. We agree generally with these conclusions, and strongly support the view that the carriage of mails, of passengers, and of certain classes of goods by aircraft will present no difficulty from the technical point of view. We are confident that demands for aerial services to provide such carriage will arise immediately at the conclusion of the war, and that it is imperative that every endeavour should be made to prepare for these demands.

3. It is scarcely necessary to point out the extreme importance to this country of being first in the field in the matter of aerial transport. We concur with Special Committee No. 2 in thinking that an experimental service should be organised as early as possible, but this recommendation should not be understood as implying that all other aerial services that may be suggested should await the final results of the experiment. On the contrary, we think that special measures should be taken, whether by direct State effort or by the encouragement of individual enterprise, with the object of commencing the schemes of transport mentioned by Special Committee No. 2 at as early a date as possible on the conclusion of the war."

* See Appendices II and III, pp. 41, 55, of Report.

One cannot help a certain feeling that one of the chief reasons for the Committee's considering that the Reports mentioned in paragraph 1 are so highly technical as to be "unsuitable for detailed examination" is that the Committee did not understand the reports themselves. Those omitted are "(A) Report by Col. O'Gorman and Mr. Bairstow on four types of aeroplanes, (B) Report by Brig.-General Maitland on Rigid Airships, (C) Memorandum by Lieut.-Col. O'Gorman [one quotes the Report verbatim as to his two ranks] and Mr. L. Bairstow [presumably the same Mr. Bairstow] as to the effect of an adverse wind on the choice of the flight-speed of an aeroplane, (D) Report by Brig.-General Maitland on a 1,000-mile Journey by Rigid Airship."

It is true that Mr. Bairstow is, by nature of his profession, somewhat given to signs and symbols and hieroglyphs, but one cannot believe that reports in which Col. O'Gorman and General Maitland were concerned would be entirely incomprehensible to those technically concerned with aeronautics, though they might well be worse than Sanskrit to many of the Main Committee. One suggests, therefore, that these reports should be published separately for the enlightenment of those concerned with Aerial Transport, except in so far as they may contain matter which comes under the Official Secrets Act. And as they deal apparently with such machines as the Handley Page with 250-h.p. Rolls-Royces and the "America" flying boat, the de Havilland 4 with the 250-h.p. Rolls and the 230 B.H.P., the R.E.8 (!) with the 150-h.p. R.A.F., and the Sopwith Pup with the 80-h.p. Le Rhône, they are not likely to be very secret.

LEGALISING FLYING.

However, though the Main Committee may have lacked technical knowledge, it possessed in the aggregate a very fair share of common sense, so one is comforted by the assurance that the members "are confident that demands for aerial services will arise immediately at the conclusion of the war, and that it is imperative that every endeavour should be made to prepare for these demands." (Paragraph 2.)

It is obvious that indiscriminate flying cannot be allowed while an Armistice prevails, and until Peace Treaties are duly signed and international squabbling has ceased for the time being. But one does suggest that, as all civilian flying is illegal at the moment, the Air Ministry—while it exists in its present form—should make it easy for reputable firms to obtain permits and material for experimental aerial services within the British Isles, whether as regular air lines or as mere hackney carriage services.

At present the Air Ministry do this to-day, as a War Department, without reference to any other department. Very soon it may find its powers cramped by the Home Office, Board of Trade, and other civilian departments, which at present it can ignore.

The fact remains that while every other country, including Germany, is already at work vigorously on civilian flying, we here are doing nothing, despite the recommendation in paragraph 3 that "an experimental service should be organised as early as possible," and the "extreme importance to this country of being first in the field." We may be first in the field, but we are certainly not first in the air, which is where our aeroplanes ought to be.

One gathers that a permit to run an experimental service to Belfast has already been refused to one firm. It would be interesting to know what other hindrances have been put in the way of progress by the barnacles of the Bolo House. It is already said that certain people are hindering civilian progress deliberately until they themselves can get out of uniform and into well-paid civilian jobs, and thus enable themselves to start level with the rest. People who have skilfully avoided going on active service during the war are quite capable of being as skilful in their own interests when a devastating Peace is threatened, and so the Hotel Bolo needs very careful watching for the next few months.

Running Costs.

The vexed subject of running costs, with which Lt.-Col. O'Gorman has dealt in a general way in various lectures, with which Mr. Holt Thomas has dealt as an apostle in other lectures, and with which Capt. Arthur Swinton has dealt in very cold blood in "The L.S.D. of Flying," seems to have scared No. 2 Special Committee altogether. Here is what they have to say on a subject about which they are wisely vague :—

4. Owing to the absence of any reliable data to serve as a guide, it has been impossible for Special Committee No. 2 to frame any estimate of the running costs of aerial services under peace conditions, and consequently of the volume of aerial traffic likely to be forthcoming. The reasons for their inability to deal fully with this part of their subject are clearly given in their final report, and we recognise that they are conclusive, and that no good purpose would have been served by putting forward estimated figures of running costs which, from the nature of the case, would necessarily have been almost wholly the results of guesswork. Nevertheless, it seems worth while to draw attention to certain considerations affecting the matter, if only with a view to pointing out the factors which must limit the costs of aerial services if they are to hold their own in competition with alternative means of transport, and which are likely to limit the demand for them.

5. It is necessary to distinguish with reference to alternative means of transport (the alternative means being surface transport) between developed and undeveloped countries. In developed countries the governing advantage of aerial over surface transport must be speed. The extent of the advantage will vary with the effectiveness of the alternative means, but where alternative means exist it must be assumed that they will be improved and rendered fully effective. In undeveloped countries the advantage will lie with the means of transport best calculated to provide access to points previously inaccessible, and the absence of road or railway communication must add vastly to the commercial importance of the ubiquitous flightways of the air. In the case of countries in or between which surface transport facilities are interrupted, as, for example, where there is the interruption of a sea passage, both the factors above mentioned should operate to the advantage of aerial transport.

6. In the paragraphs which follow we have regard chiefly to developed countries where aerial transport is called on to eclipse the speed of surface transport.

7. High load and speed are antagonistic elements in the problem. To secure high speed, the commercial load must be kept within narrow limits. From the figures submitted to us it would appear not to exceed 25 per cent. of the total loaded weight of an aeroplane. That is to say, that the loading efficiency or the ratio of useful load to gross weight in an aeroplane is only poor. On this account it would seem as though aeroplane transport must always remain auxiliary to surface transport, and that speed must always be in the end the predominant factor of advantage.

8. Comparing the train with the aeroplane, the train as a traffic unit of movement is large. There must, therefore, be wider intervals of delay for the accumulation of loads between successive units than in the case of the aeroplane. The aeroplane is a small unit, and therefore a flow of urgent traffic can be given by a constant succession of units from the aerodrome, with consequent time economy. The aeroplane affords the better time-saving the longer the journeys, because in long journeys the time lost between the home and the aerodrome is a less appreciable factor; the saving of time from speedy flight only counteracts this loss for journeys in excess of some minimum distance.

One is, of course, hampered in one's comments by the fact that subjects which seem to be glaring omissions from the report may have been covered by the secret and confidential sections which have been considered unfit for the perusal of an innocent and pure-minded public, unversed in the wanglings of Government departments and big traffic concerns. Therefore one is more or less forced to treat these omissions on the assumption that they have really been omitted.

It is quite natural that no attempt should have been made to lay down definite figures for running costs, because there are so many variable factors to be considered, but it is rather a pity that no attempt was made to fix a kind of datum line which would permit people to make rough estimates for other services. For example, if one had figures for a service over a 300-mile route on 150 h.p. two-seaters, on a basis of so much per passenger-mile or per ton-mile, one could by a simple process of multiplication envisage roughly the running costs of a 3,000-mile route on 1,500 h.p. twenty-seaters.

The results would not be accurate, but they would give one a rough general idea, much as one can give a reasonably good guess at the output of an aeroplane factory when told the number of hands employed, reckoning from the fact that it takes a moderately efficient workshop 4,000 man-hours to build a two-seater aeroplane minus engine. Some highly efficient shops take 2,000 man-hours, some bad shops take 6,000. The type of machine and its detail design makes a difference. And other variable factors affect calculations, but the 4,000 man-hours is a useful standard for comparison.

Similarly, reasonably good average figures for running costs might have been compiled, if only for the purpose of setting a standard to be beaten in actual practice. One gathers that some sort of Civil Aerial Transport Propaganda Committee has arisen as a kind of miasma from the remains of the original C.A.T. Committee, with the idea of gassing the world into a belief in Aerial Transport. Possibly this residuary Committee may see its way to supply the missing figures.

Some Simple Deductions.

So far as the C.A.T. Committee's theories go they are quite sound. Paragraph 5 indicates briefly precisely what our friend "Medway" has been proving in his usual conclusive and amusing way in the "Commercial Aeronautics" section of this paper for some months past. In fact, so closely do many of the ideas of the Committee's Final Report resemble those first made public by "Medway" that one is almost tempted to believe that the Committee, or some of its leading spirits, have been reading "Medway's" articles.

Of one thing, however, the Committee must be acquitted. They certainly never plagiarised from this paper that appalling phrase "the ubiquitous flightways of the air." There are many examples of bad editing and careless reading in the Committee's Reports, and it is evident that the whole document has not been compiled by an experienced drafter of official papers, but even so one is staggered at finding such a specimen of banal journalese in the report of any serious Committee. But perhaps it is merely a humorous effort on the part of some member, who desired to pull the collective leg

of colleagues who were obviously lacking in a sense of humour and who took his suggestion seriously.

One labours this point somewhat because it indicates a danger to civilian aviation. If people are appointed to an important Government Committee who are capable of using such a pinchbeck phrase, there is a danger that people of equally low mental calibre may be appointed to high positions in the Civil Service which will control aeronautics in the future. And then one can foresee that the whole business will be run on the gilded-gingerbread ideas of the sensational Press instead of in accordance with the sound and respectable traditions of the older Civil Services.

The foundations of civilian flying in the future must be laid during the next few years on reliability and respectability. Newspaper "stunts," such as the proposed Transatlantic competition for the further advertisement of the Viscount Northcliffe, do harm. They are merely stimulants which are followed by a depressing reaction. If aviation indulges in too much newspaper "dope" it will become as degenerate and as debilitated as an actress who indulges in too much cocaine.

A little newspaper stimulus of the right kind is good. Or, applied as an anæsthetic, when some 50-passenger aerial liner has decanted a load of lime-lit pseudo-celebrities into the sea, or has crashed and burnt them on land, a newspaper boom may do much to allay public horror of the danger of the new vehicle. But continued "stunting" by newspapers written by uneducated Fleet Street hacks and staffed by ignorant and uninterested sub-editors, will in the end come perilous near wrecking serious aeronautics.

Some Practical Points.

Turning now to purely practical points, one is somewhat puzzled by the statement that "the commercial load . . . would appear not to exceed 25 per cent. of the total loaded weight of an aeroplane." (Paragraph 7.) Surely the commercial load depends on the weight of fuel and crew carried.

What is called "useful load," *id est* everything outside the dead structure weight of the machine, does in several machines constitute 50 per cent. of the total loaded weight. It seems unwise to lay down as a fundamental fact the statement that fuel, crew, and such essentials cannot be less than 25 per cent. of the total weight. It is quite conceivable that, with efficient engines and a light pilot, the 50 per cent. "useful load" might be two-thirds commercial (*id est*, passengers or goods) and one-third essentials to navigation. The proportion depends very largely on the distance to be covered between stops.

Also, the proportion has really nothing to do with the value of the service. A machine carrying urgent mails over large distances might well carry 10 per cent. commercial load and 40 per cent. fuel and crew and still be a business proposition.

At the same time one quite agrees that aeroplane transport must always remain auxiliary to surface transport, just as motor transport must remain auxiliary to rail transport, and as rail transport would be largely auxiliary to canal transport but for the fact that the railway companies swindled the public by buying up the canals and closing them down so as to remove the danger of their competition in the conveyance of heavy goods. Even now railways are only auxiliaries to steamship lines and are not the world's chief lines of transport.

Multiple v. Single Engines.

9. The absence of a track is a great financial advantage. The expenses standing in lieu thereof are far less—viz., the cost of landing grounds, wireless installations, weather-reporting services, and signalling of routes at night or in fog. The cost of landing grounds will only be a small factor per "aeroplane mile" in any reasonable commercial scheme of transport, but as aeroplanes become increasingly reliable the need for alighting grounds will not be wholly removed, since safety is a paramount condition; moreover, multiple-engined machines, desirable as they are from the point of view of safety, are commercially justified only when the loads are great enough to warrant aircraft of this size.

Turning to Paragraph 9, it is interesting to note the Committee's limited faith in multiple-engined machines. This type of aeroplane undoubtedly has much to recommend it, especially for long journeys over sea or over country where landing-grounds do not exist. At the same time one has a kind of feeling that a single power unit of proved reliability will be found more economical in every way.

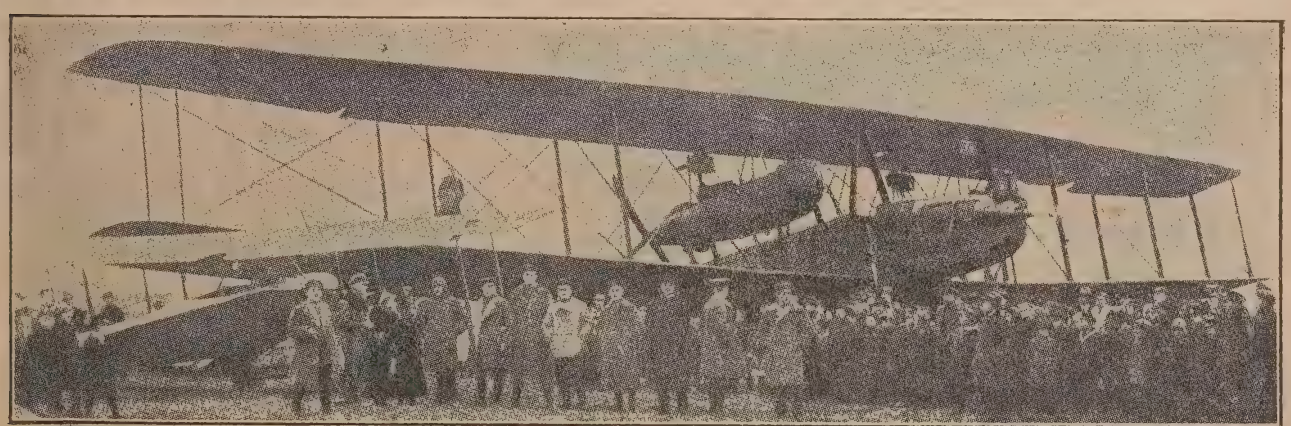
There will be no need to carry a crew of engineers to look after countless taps and gauges and indicators. A pilot can control a single 2,000 h.p. engine as easily as he can control one of 200 h.p. Also it seems probable that greater fuel economy can be achieved in one big engine than in many small ones. And almost certainly a big engine can be brought down to a lighter weight per horse power.

The difficulty of making a single airscrew to use so much power efficiently seems to be the chief objection. But doubtless this can be overcome. And some genius may some day produce a light and efficient transmission gear by which one big engine may drive several airscrews.

Business by Aeroplane.

10. In canvassing the traffic expectations of the immediate future, a distinction may be drawn between passenger and goods traffic.

Passenger traffic divides itself into two distinct sections, that which moves for business and that which moves for pleasure. Business traffic will turn primarily on speed and reliability, and will consist of inward and outward traffic where rapidity of movement is an important consideration. Economy of time is of great importance to many business men who find absence from their regular place of work disadvantageous. As it becomes



A German Giant Biplane. A possible commercial aeroplane of the immediate future. Apparently there are five engines, two in each nacelle coupled and driving one airscrew, and one in the nose of the fuselage.

possible by aeroplane to fly 400 to 500 miles out and home within the day, and to give a reasonable interval for the conduct of business between the flights, so it becomes likely that many business men will avail themselves of the opportunity.

The occasional use of single machines for rapid journeys in any direction rather than along a fixed route, carrying occupants who pay special fees for the high speed, will probably be one of the early and increasing lines of development. It will educate the public and prepare them for regular services. This could be undertaken immediately peace comes, and would not be open to the same objection as any premature attempt to run a daily service to scheduled time.

With regard to passenger traffic generally, the question of safety in connection, more particularly, with aeroplanes will be of the highest importance. The large number of accidents which occur at the present time are, in our opinion, chiefly due to inexperience and taking risks during training and practice which would not be justified in ordinary times. This subject is no doubt constantly before the authorities in the experimental departments connected with aeronautics, and investigations are, it is understood, being constantly made into the cause of accidents by the Accidents' Investigation Department of the Air Ministry. Improvements are continually being made with the object of reducing accidents, and in the ordinary course of events it is not too much to expect a large reduction in their number at the conclusion of the war. Thus the chief deterrent to flying becoming universal will be removed without any remarkable invention being made.

Paragraph 10 displays considerable foresight—and remarkably bad grammatical construction. It becomes evident on investigation that the Committee means that the single machines and not the fixed routes will carry occupants who pay special fees.

This species of flying is of the nature of a taxi-cab service, and as such will doubtless provide the "stunt Press" with many alluring anecdotes. The obvious objection to such a service is the fact that owing to the tenderness of aircraft in the matter of weather (*pace* Lord Weir) the busy business man who wishes to travel by air to save time will not be able to make definite appointments.

It does not seem to have occurred to those who make this objection that there is really little need to make a definite "date"—as the Americans call an appointment at a fixed time and place. The busy man has plenty to keep him busy in his office without ever leaving it. If he has to go from London to Edinburgh or Dublin, or from Bristol to Norwich, or the like, he has to leave his work to accumulate in his office for two or three days and work overtime to overtake it when he returns. By aeroplane he can do the return journey in a day and have several hours in which to do business.

Therefore, to save the day or two, instead of making a definite date, he merely intimates that he will arrive on the first suitable flying day of the next week. If the meteorological report on Monday says that Tuesday will be fine for flying, he wires or telephones on Monday and the people at the other end are ready for him on Tuesday.

He also arranges on Monday for his aero-taxi and pilot. He starts early, and, barring accidents, is back again for a late dinner. Possibly he may be let down by "Meteor"—as the R.A.F. call the official weather prophet—but the chances are in his favour, and "Meteor" is improving rapidly. And, anyhow, the business man will be no worse off than if he had gone by rail in the first place.

One is old enough to recall the days when it was nothing unusual for the Holyhead-Dublin boats to be hung up by stress of weather for as much as two days, and one is strongly under the impression that the modern aeroplane is as weather-proof as were the old North Wall boats of 1880 or thereabouts.

Chances for Pilots.

Apropos single-machine flying, one is moved to suggest to R.A.F. pilots that many of them seem to have missed certain excellent lines of action when seeking post-war employment. The general idea seems to be to hang round the necks of the various aircraft manufacturers and promoters of aerial transport lines and beg them for jobs as pilots. Doubtless many pilots of proved reliability will get jobs in this way in due time—possibly an overdue time; but the number so engaged must be very limited for many years to come.

There is, however, a far better chance for the man who strikes out on a more individual line. One ventures to indicate some of such methods. Except for the very young pilots, most of our aviators had some sort of pre-war job, and the line of least resistance seems to be for the pilot to return to his old occupation with his ability to fly as an added asset.

For example, the engineer who was merely an engineer can now put in for a job on a big contract abroad, say on reconstruction work in France, or on oil pipe-line work in Persia, or on railway work in Africa, with the added qualification that as an experienced pilot he can keep constantly in touch with head office at home, or with the chief engineer overseas, by means of an aeroplane. If on pipe-line or railway work, he can fly up and down the line on inspections and do as much in a day as was formerly done in a week. Or if employed on a fixed point up-country, he can fly down to the coast frequently to hustle the unloading and entraining of stores and material for his works.

The pilot who is merely a business man, a buyer or seller of goods, can, if gifted with the ready tongue which would make him a success as such, sell his services more highly by virtue of being a pilot. He can point out to the principal of his old firm, or a new one, all the advantages of aerial communication with other firms, and that the said principal may not care as yet to risk his valuable life in such travelling, in spite of the keenness of commercial competition in these war-taxed days.

Therefore, the pilot will argue, he himself, the trained business man and pilot alike, will—for a suitable salary—act as the firm's liaison officer with its more remote customers, and will carry the principal's instructions verbally. Moreover, he will add, his services will save much money, for he will himself pilot the firm's aeroplane and oversee its being kept in order, whereas otherwise the firm would have to keep a chauffeur and possibly an engineer, or, as an alternative, pay the high prices of the aero-taxi garage.

One feels confident that many business firms quite outside the aircraft business will, when skilfully approached, pay quite decent salaries to enterprising young business men who will "travel" for them by air and pilot themselves. The advertisement to be gained by the first few firms to send out aerial representatives will be well worth the money, and it should not be very hard for an enterprising pilot to persuade an enterprising firm of the fact.

After the enterprising firms have adopted this scheme other firms will be compelled to do likewise in self-defence. The employment of pilots as business representatives will undoubtedly start within the British Isles before the much-discussed International Convention has achieved results, but it is particularly in connection with foreign trade that the stress of competition will force the more conservative firms to employ aviators.

Pleasure Flying.

11. Pleasure traffic will depend on novelty, comfort, and safety. Flight may afford pleasure in itself, but pleasure traffic will be seasonal in character, will depend largely on weather, and will be more costly the more irregular it is. There is likely to be small regular demand, which will grow as flight movement becomes a habit. The demand in the immediate future will probably not be extensive, owing to the cost, but it would appear practicable to open routes from well-chosen centres.

The reference to pleasure flying in Paragraph 11 seems a trifle inadequate, and one feels inclined to disagree with the opinion that the demand in the immediate future will

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not be extensive. At a moderate estimate there are a couple of million people each of whom wants what is vulgarly called a "joy-ride" in an aeroplane. Of these a million will want another. And half of these will want as many more as they can afford.

Now, it will take a vast number of aeroplanes and pilots to give four or five million joy-rides of, say, 15 to 20 minutes' duration apiece. And if the firms which organise these pleasure-trips are skilfully and honestly run, the esteem in which flying will be held by the public will be high.

It will, however, be very necessary for the Authorities to take strong steps to guard against the running of pleasure-trips by unscrupulous firms using obsolete war machines which have been deformed by being kept long in store, and employing inexperienced, and therefore cheap, pilots. The good name of aviation has already suffered from the operations of the get-rich-quick crook, and one hopes that the Government and the Society of British Aircraft Constructors alike will endeavour to extirpate him in the future.

Pleasure flying will cover many branches of activity. The wealthy munitioneer may hire a big passenger-carrying machine, with pilots and mechanics, to stay at his "little place in the country" during the summer and take his house-party guests for trips on fine days. Or he may run a big flying boat as a kind of tender to his silver-plated yacht, anchored in one fashionable harbour after another. From this kind of flying *de luxe* one descends all the way down the scale to the joy-ride 'bus taking passengers a dozen or two at a time for 10s. trips from an aerodrome near a big city, or the analogous flying-boat performing for a similar fee at a popular seaside resort somewhat the functions of the cheap yachting trip commonly known as the "shilling emetic."

One can plainly see thus that the demand may be very extensive indeed if the business is well managed. But one would again emphasise the fact that all passenger vehicles must be officially examined at frequent intervals and that all pilots must be of proved experience and reliability.

Aerial Mails.

12. Goods traffic will be for (a) mails and (b) general goods. Commercial considerations are not the only ones to be taken into account in determining upon an aerial mail. It is not indispensable that the cost of a letter by aerial mail should be fully borne by the service, if Imperial or other reasons demand that the use of aircraft shall thus be developed. Mails offer a most promising class of traffic, because the load to be carried is reasonably uniform, the weight small, and the demand for speed great. The prospects of an aerial mail will be best when the conditions referred to in paragraph 5 above as operating to the advantage of aerial transport make themselves most markedly felt.

It has been shown in the interim report of Special Committee No. 2 and in Appendix E appended thereto that in the case of services between London and large provincial towns a flight of at least three hours, at an average, say, of 100 miles an hour, is required for the speed of an air-mail service to reveal itself, and to offer a sufficiently marked saving of time over land transit; on an oversea journey, such as the passage to Dublin, the saving of time is much more evident. It would appear necessary to charge some such fee as 1s. or more per letter for an inland air-mail to prove remunerative.

The cost of electric cable communication, say, to Johannesburg, at £8 10s. per 100 words (a message taking about 24 hours to reach its destination), can be contrasted with the cost, say 2s. 6d., of sending a letter of 5,000 words to the same spot in six days by aeroplane. The London mail could in the future be conveyed to Calcutta in four days, as against 16 days, the minimum at present. These instances illustrate the intrinsic utility of air services, apart from the value of making closer links within the Empire, and of giving support to the construction of aircraft so as to be ready for war emergencies.

It is more difficult to settle the reasonable expectation of general goods traffic, which must take the form of express parcels, usually of small weight. Furs, lace, jewels, precious metals, extracts, essences, valuable feathers, etc., might be carried by air because of their high value; also rare and out-of-season fruits and vegetables, flowers, and perishable articles generally. Newspapers and periodicals afford scope for aerial services, because news grows stale quickly. Drugs, dyes, chemicals, optical and surgical and other instruments will be so carried, as often these are wanted quickly. Wherever, for want of some article, life is endangered or industry is at a standstill, as where some spare part or tool is required for a machine, the aeroplane will afford the quick remedy, and its flight will be profitable. Cinematograph films, gramophone records, and commercial samples may figure in the class of goods carried by aircraft. Their rapid distribution will quicken exchange, and this will react to increase the volume of traffic, but the whole series of illustrations above given tends only to show how limited the total volume or weight of aerial goods traffic is likely to be in developed countries.

One has heard more than enough talk about aerial mail services ever since the pre-war Hendon-Windsor fiasco. Some day, no doubt, these services will be of value, but it seems unlikely that any of the really valuable trans-Continental lines will be in operation for some years to come, and, except perhaps for lines to Ireland, there seems little use for them in the British Isles. Business flying seems likely to develop by way of pleasure flying long before the great mail routes are developed so as to provide a reliable service.

And the success of the mail lines seems likely to arise more from the success of business flying than from anything else. The ordinary individual is not going to pay a shilling for the postage of a letter which may be burnt or drowned on the way, but it may pay a business firm, if only for the advertisement of being up to date.

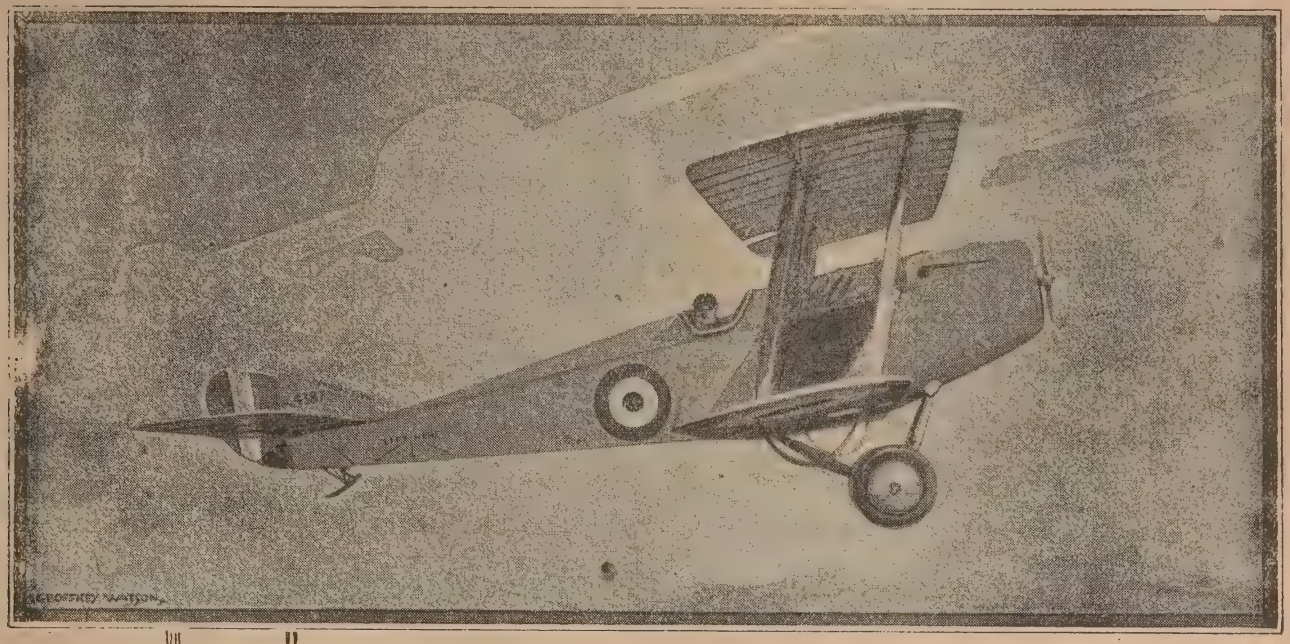
Airships v. Aeroplanes.

13. The technical appendices to the reports of Special Committee No. 2 contain interesting information as to the respective capacities of the airship and the aeroplane. We think it advisable to make some general comparison, from the commercial point of view, between the two classes of aircraft based upon this information. For this purpose the largest type of airship is taken as an example, since it is found that as the size of an airship increases the ratio of its useful load to gross weight improves—e.g., for a ship of 60 tons gross, 30 tons of disposable load are available. This represents, roughly, nine times the load-carrying capacity of the largest modern aeroplane. The prime cost per lb. of disposable load in the case of an airship is estimated at almost one-half the prime cost per lb. in the case of an aeroplane. The economic limit of the journey without landing is about 1,000 miles in the case of an airship, as against 500 miles in the case of an aeroplane. The airship, therefore, has the advantage of a greater load capacity; but its speed, under present conditions, is slower, being probably not more than 60 m.p.h. In this respect the performance of the airship on overland routes would appear in general to be open to keener competition from rail transport. On the other hand, on sea routes the airship will, save in contrary winds, have a marked advantage over steamships as to speed. As compared with the aeroplane, the cost of handling and housing airships will be higher, and, until open-air mooring is fully developed, the regularity of airship services will be more adversely affected by high winds than that of aeroplane services. In journeys in which speed is not the most material factor, and particularly where passengers are being carried, and safety is consequently a paramount consideration, the airship offers advantages over the aeroplane in the way of comfort, ease of navigation, capacity for safe flight at low altitudes, and high ratio of disposable load.

One cannot conceive under what circumstances the Committee committed itself to the statement that the speed of an airship is probably not more than 60 m.p.h. The modern Zeppelin does something like 80 m.p.h., and 100 m.p.h. is well within possibilities.

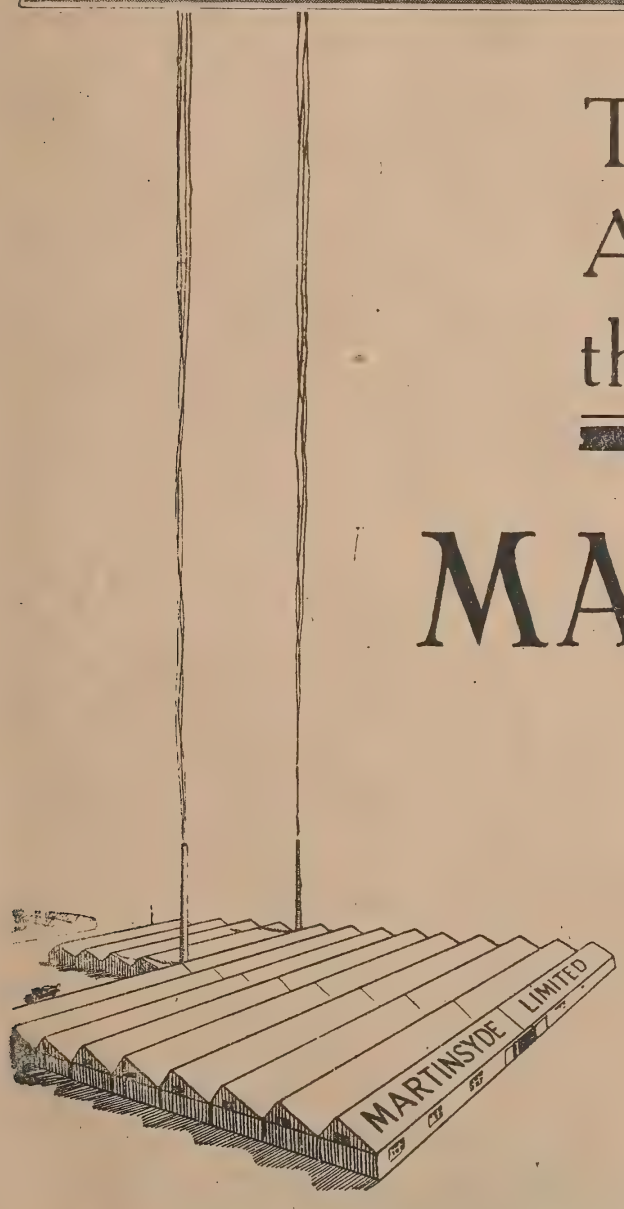
Further, it is doubtful whether, taking everything into consideration, the cost of handling and housing airships is higher, if taken on a passenger-mile basis, and setting off the airship "landing parties" against the number of mechanics needed for aeroplanes and engines. Certainly the vast number of men needed to overhaul, clean, repair, rebuild, and otherwise handle the engines inflicted by our grossly incompetent Technical Department of the Ministry of Munitions on the long-suffering active-service pilots compare very badly with the few needed to look after German airship engines.

One believes that our own airship people can prove on figures that their branch of the R.A.F. is more economical in men and material on a mileage basis and on a flying-

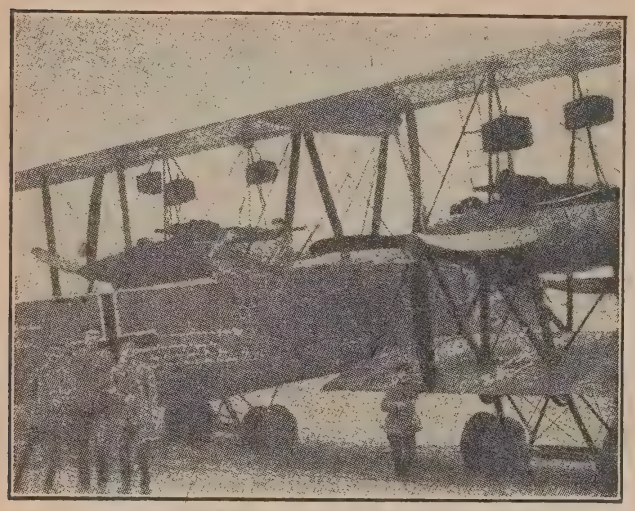


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A closer view of an engine-housing and propeller of a German Riesenflugzeug or Giant Aeroplane.

hour basis than is any aeroplane service, and on duration the airships have the aeroplanes beaten hollow. Three-day patrols are not at all uncommon, and the trip of a certain Zeppelin from Bukharest to Central Africa and back, involving seven days in the air, is one of the most magnificent performances of the war.

With the production of helium on a commercial basis, and the consequent non-inflammability of airships, the position of the airship and the aeroplane, whether as weapons of war or as vehicles of peace, will be almost reversed. And, even while hydrogen is still used, one is inclined to bet that more or less regular airship services will be running between Europe and America while crossing the Atlantic by aeroplane is still regarded as a great adventure.

Air Stations.

14. On the question of landing grounds along aerial routes, there was some divergence of opinion in Special Committee No. 2, and it will be observed that the interim report of that Committee is only signed by Mr. Holt Thomas subject to a reservation on this point. While we agree with the majority of the Special Committee in not feeling able to recommend that chains of landing grounds should necessarily be laid out at regular and comparatively short—say ten-mile—intervals along aerial routes, especially in developed countries, we consider, nevertheless, that the advantages of lines of landing grounds on certain main routes hereafter to be laid out would be very great, and that such lines would largely assist the development of civil aerial transport. In undeveloped countries regular chains of landing grounds at suitable intervals along aerial routes will be indispensable; and in such countries the consequent expense will be less material in view of the comparative advantages which aircraft will enjoy in competition with other forms of transport. Regular sea stations for the landing of aircraft are at the outset essential if trans-oceanic aerial transport is to be seriously attempted. It is recommended that when questions of laying out, maintaining, or abandoning landing grounds for military purposes have to be considered, regard should be had, if possible, to the probable needs of civil aerial transport hereafter. The establishment of landing grounds within urban areas should not necessarily be precluded, and the institution of rapid transit schemes between aerodromes and town centres, such as post offices, would be of great value. Developments in aeroplane design may permit of landing safely and conveniently within a narrow compass in the future; and, as has already been indicated, a central situation for an aerodrome for civil aerial traffic has considerable importance.

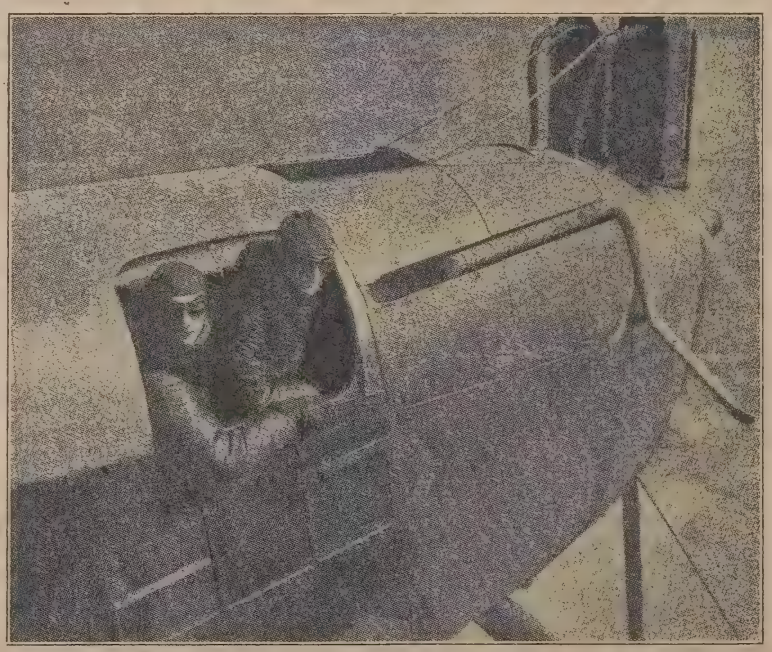
15. We recognise, however, that military considerations must override all others, and, though we have necessarily dealt with our subject matter mainly from a commercial point of view, we would emphasise the importance: first, of the need that all established commercial routes with their aerodromes and landing places should be suitable for strategical and tactical use in the event of war; and, secondly, of the need for the rapid convertibility in the same event of some types of commercial aircraft to military uses. We do not offer detailed suggestions on these points, which appear to be peculiarly within the province of the Air Ministry; but we record our strong opinion that it is vitally necessary, in the interests of national safety, that all air routes established should conform fully to military requirements, and that the development and manufacture of types of commercial aircraft should for a long time be governed by the requirement that they should be in some manner of effective military use, and that this requirement should be satisfied even at the cost of a serious diminution in the commercial value of both routes and craft.

16. With regard to the marking of aerial routes we agree with the practical suggestions of Special Committee No. 2. It will be observed that the Special Committee do not recommend the institution of a general system of marking for the whole country, but suggest that if companies operating commercial routes provide their own schemes of marking, these should be subject to some central control for the purpose of avoiding a possible confusion arising from the employment of different schemes. We are of opinion that it will not be necessary for the State to lay down any definite scheme for the provision of route marks. Probable improvements of signalling by directional wireless and of other methods of signalling from aerodromes by night and day would seem to make it inadvisable to embark upon the organisation of any universal system of arbitrary markings.

17. In concluding that part of our report which deals with the practical possibilities of aerial transport we desire to draw attention to the great importance of Meteorology in connection with aerial routes and services generally. The interim report of Special Committee No. 2 deals more particularly with the dissemination of meteorological information, and we propose to touch upon the problems of meteorological research at a later stage in the present report. The practical suggestions contained in the interim report of Special Committee No. 2 and in Appendices G and H to that report can be used as a basis for a system of meteorological stations which, in our opinion, should be organised immediately after the conclusion of the war. The provision and management of such a system are matters which we think should be left to the State and not to private enterprise.

These paragraphs call for little attention, for all will agree with their general sentiments. As regards Paragraph 14, it seems that chains of landing grounds will be much more important in undeveloped countries than in those which are more civilised (using civilised in the sense of mechanically ordered). An aeroplane can land on European grass or even corn, but not on Asiatic or African or American scrub or desert or forest.

But it will help development still more if aeroplane designers will turn their attention more closely to the question of starting from and alighting on platforms, wires, and other artificial and mechanical contraptions.



The lookout port of the forward engine housing of a Riesenflugzeug, or Giant Aeroplane, taken in the air.

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One could probably put up a hundred such stations in a forest for the cost of clearing one adequate aerodrome.

As concerns Paragraph 16, one disagrees with the Special Committee. The scheme for marking should be the same for all aerodromes, at any rate within the boundaries of each country. The State, as represented by the Air Ministry, should lay down a definite system of marks, and should insist on their being used by all aerodromes.

To permit different markings for places of landing, danger points, wind direction, and so forth would be as bad as if one compass-maker chose to split his card into 365 points so as to match the days of the year. This matter of ground markings is one of the very few things in which every effort should be made to produce world-wide standardisation, and in which national standardisation should be compulsory.

NEXT WEEK.

The consideration of the Reports of Special Committee No. 2 and the numerous Appendices must be deferred to a later date, as must the consideration of the further Chapters of the Main Committee. Next week's issue of this paper and the issue of the following week, being the first two of the new volume, will be devoted, in accordance with custom, to the review of the past year and to the publication of the Honours Lists of the Flying Services. One hopes that it will be possible to make these issues more entertaining than recent issues dealing so much with matters of Civil Aerial Transport.

Nevertheless, the whole future of flying is so much wrapped up in these Reports that they must be studied at length. The reason for this is that, although the people who drew up these Reports are not, with a few exceptions, the most competent people who might have been chosen for the work, they know more than does the ordinary ignorant Cabinet Minister or M.P., and therefore their *obiter dicta* will certainly be accepted as Gospel when questions of aerial legislation are before Parliament.

Consequently it pays one to study the future official point of view beforehand. Let this be one's excuse for inflicting so much of this subject on one's long-suffering readers.

With which apology one wishes all readers of this paper a Happy and Prosperous New Year, and one in which they may have their fill of flying and as nearly complete immunity from accident as is compatible with their necessary education in the ungentle art of aviation.

C. G. G.

MAJOR-GENERAL BRANCKER'S APPOINTMENT.

It is currently reported among aeronautical people that Major-General W. S. Brancker, A.F.C., Master-General of Personnel, R.A.F., has accepted an appointment with Mr. Holt Thomas' aerial transport company, and is being seconded from the R.A.F. "for special duty" to take up that appointment. One understands that General Brancker will retain the substantive rank of Major-General R.A.F., as his commission, which has hitherto been temporary—as is the case with all R.A.F. commissions except those of Major-General Sykes, C.M.G., Chief of the Air Staff, and Major-General Sir Godfrey Paine, K.C.B., M.V.O., Inspector-General R.A.F.—has recently been made a permanent commission. Also one understands that General Brancker is made a K.C.B.; though, as this paper goes to press before the New Year's Honours List is published, the statement is not confirmable at the time of writing.

These special privileges accorded to an officer who is taking up a commercial career bear witness to the weight carried by General Brancker in high places and emphasise his value to Mr. Holt Thomas' schemes for the future development of Civil Aerial Transport. General Brancker has always been a firm believer in the future of commercial aeronautics, and has made confession of his faith in a number of those neatly worded and convincing speeches which he delivers with such enviable facility, so that it is not surprising to find him embarking on this new development of aerial navigation.

Mr. Holt Thomas' "team," if one may use the term without disrespect in relation to such distinguished persons, is of great and daily increasing strength. With Mr. Alfred Turner, late Director of Aeronautical Contracts at the War Office and later under the Air Board, to watch over financial affairs; with Lieut-Col. O'Gorman to work out and formulate schemes of development; with Mr. Hugh Burroughes, late of the Royal Aircraft Factory, as General Manager; with Captain Geoffrey de Havilland as designer-in-chief; and with Captain Hiscox, also late of the Royal Aircraft Factory, in charge of works, Mr. Holt Thomas already had an exceedingly strong combination. Now, with the addition of General Brancker to attend to the amenities of what one may perhaps call the higher international diplomacy, it is evident that Mr. Holt Thomas is equipped—in the French sense—to meet the most acute foreign competition for international air traffic.

MR. BERTRAM JONES AND THE AIR MINISTRY.

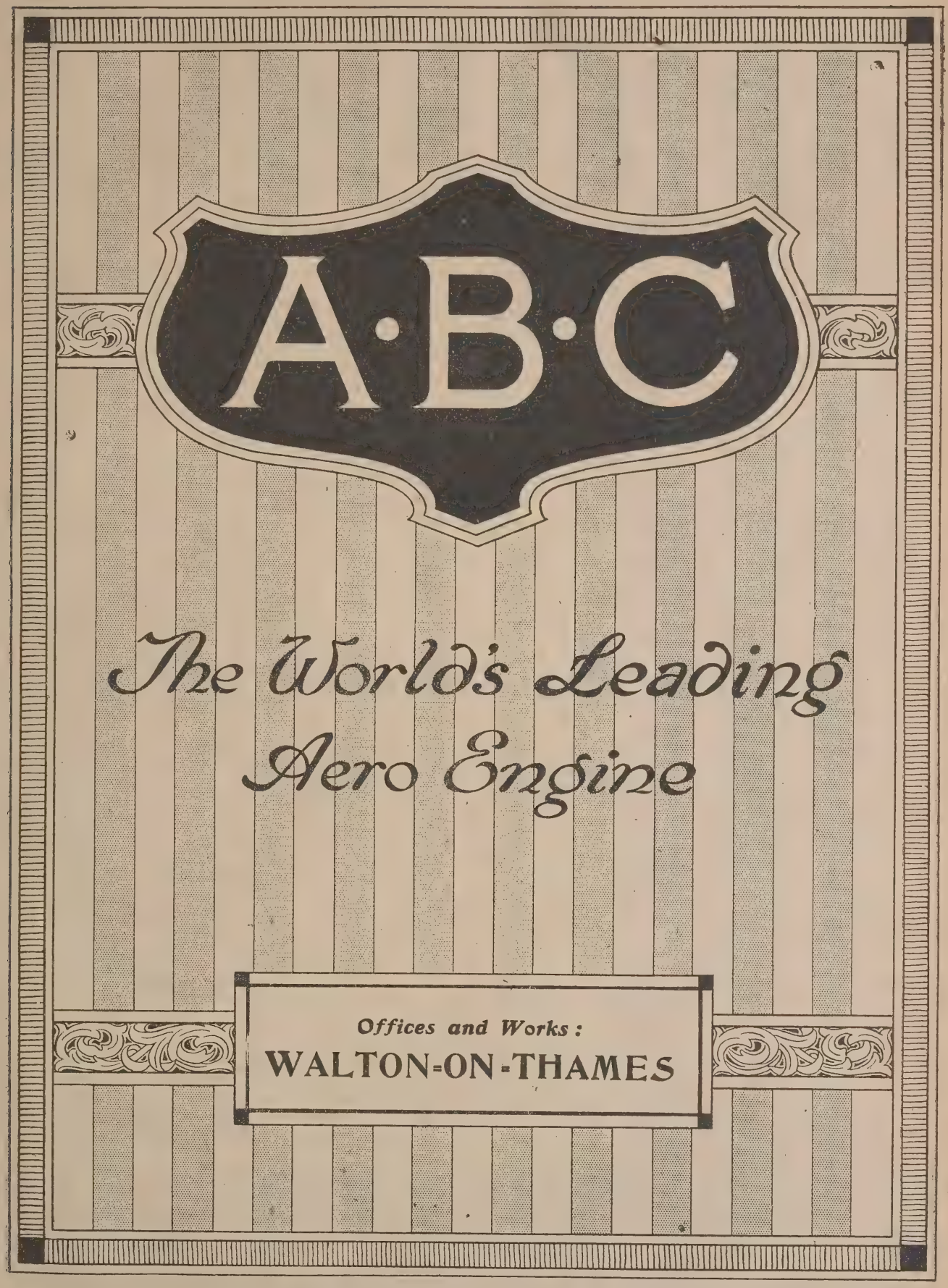
The following official statement has been issued by the Air Ministry:—

> In view of the armistice, and pending demobilisation and the reorganisation of the Air Ministry which must follow, the Air Council have decided that the work entrusted to Mr. Bertram Jones, of reporting on the war system of provision, maintenance, and issue of stores, should be discontinued. The Council have conveyed an expression of warm appreciation to Mr. Jones for his services, and for his great assistance, in an honorary capacity, to the Air Ministry during the last year, in connection with the organisation of a Finance Division, and thereafter with questions arising in the Department of Equipment.

Mr. Bertram Jones was educated privately, and served in the South African War, winning the medal with three clasps. During the European War he has given his time to National Service, and was responsible for the reorganisation of the commercial side of the War Office in 1917. At the request of Lord Rothermere he undertook, with Sir A. C. Roberts, the organisation of financial and other arrangements for the amalgamation of the R.N.A.S. and R.F.C. into the R.A.F. (including the Finance Department of the new Ministry). He was appointed Adviser to the Finance Department, but resigned shortly afterwards.

Subsequently he was appointed Civil Adviser to the Comptroller-General of Equipment—then Maj.-Gen. Brancker—and later undertook a series of important investigations into the general organisation of the R.A.F. Mr. Jones has written a good deal on finance and political economy.

It is generally hoped that the experience which he has gained during his investigations at the Air Ministry will be utilised for the improvement of the R.A.F., when reorganisation sets in. If not used officially, doubtless that experience will be of great use unofficially.


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A DISTINGUISHED VISITOR.

A welcome visitor of late to places in London where aviators congregate is Lieutenant Louis Noël, of the Service d'Aviation Française, who is over on well-earned leave from the Army of the Orient. Louis Noël can, one believes, claim on many counts to be the most distinguished aviator in the French Service, though he has never become a popular idol in the French Press.

To begin with, he took to flying in 1910, and so has flown regularly for eight years. Secondly, he joined the Service d'Aviation on the outbreak of war, and has been a front-line pilot ever since, so that, as far as one can gather, he is the sole and only French pilot who has been through the war from start to finish with front line troops without ever having had a job at a base or at a training camp. It would be interesting to know whether any pilot in any other country has a similar record.

He finished his active-service flying a single-seater Spad chaser, machine-gunning Austrians and Bulgars from 150 feet or so in the Balkan defiles, with mountains on each side and no landing-place within ten miles. After which he flew on a political mission from Salonika to Jassy, the capital of Roumania, and back. All of which constitutes a rather wonderful record for a man who is over 47 years of age, considering that flying is supposed to be a young man's game, and that scout-flying certainly is so. As far as one can discover, M. Noël is the oldest active-service pilot of any country, ally or enemy.

His promotion from "*sapeur-aviateur*"—or private—to lieutenant does not seem remarkable compared with our British custom of cheap and easy promotion, but one must remember that promotion is much more difficult in the democratic French Army, and that only a very few French pilots have been given commissions from the ranks, the custom being to use privates and N.C.Os. as pilots and to give the command of escadrilles to officers of other arms, whether they knew anything about aviation or not.

M. Noël's reward has been the appreciation of all the Armies with which he has served. During his two years in France he was awarded the Médaille Militaire and the Croix de Guerre—with three palms and two stars—and the Russian Cross of St. George. In the Balkans he was awarded the Légion d'Honneur by the C.-in-C. of the Army of the Orient, the British Military Cross for service with British troops, the Servian White Eagle for operations with the Servian Army, and the Roumanian Order of St. Jacob for his flights between Salonika and Bukharest, before Roumania was defeated—he was the first aviator to make this long journey across enemy Bulgaria.

The many people in this country who had the privilege of meeting M. Noël in this country before the war, or of enjoying passenger flights with him at Hendon, will rejoice exceedingly at the deserved distinctions which he has won, and will wish him a Happy and Prosperous New Year, and success when he leaves the Service of which he is now so distinguished a member.—C. G. G.

DUMPING: A WARNING TO ENGINE MAKERS.

If engine-makers in this country intend to keep their share of the aeroplane business, they must treat aviation as a business proposition and not imagine that they are going to get prices for their engines from the makers of commercial aeroplanes such as have been paid by ignorant or venal Government departments for all sorts of commodities. Apparently some engine people have still to learn that the maker of post-war aeroplanes is not a Government gold-mine.

Recently a well-known aeroplane-maker who wanted some engines for commercial aeroplanes made inquiries in the motor trade and found that he was expected to pay £2,000 apiece for engines of the power he required. In some way or other he came into touch with certain Americans, holding, it seems, official or semi-official positions. As soon as they learned what he required, they agreed to let him have six of the much-boomed Liberty engines, of the latest type be it noted, for the price of one British engine.

If the American engine-makers are going to be allowed to dump their thousands of surplus Liberty engines in this country and in France at a matter of £350 apiece, it is going to be a mighty good thing in some ways for aeroplane-makers and for the development of commercial aviation, for it will make it possible to produce cheap aeroplanes with a good reliable engine—albeit heavy and clumsy. But it is going to be a very bad thing for the British engine-makers.

One therefore counsels the engine-makers to remember that the Government has already paid all the experimental costs and dead charges on their engines, and that everything they make now over and above cost of labour and material is sheer profit. The aeroplane-maker is not going to pay £2,000 for an engine to put into an aeroplane which costs less than £1,000 to build. And when it comes to building light pleasure craft he is not going to pay £1,000 for a glorified motor-cycle engine to put into a machine which costs about £200 to build and ought to be sold at £500 "all on."

Unless engine and aeroplane manufacturers alike get together and revise current ideas of prices—based on war extravagance—the British Aircraft Industry is going to be beaten out of the world's markets by the Germans and Americans just as the British motor trade has been. And its defeat is going to be accelerated by the dumping of cheap American engines and parts in this delightful free-trade asylum for imbeciles and aliens.—C. G. G.

"THE AEROPLANE" SPECIAL ISSUES.

THE Special Service Numbers of "THE AEROPLANE" will appear, as usual, with the first two issues of the New Year. That of January 8th will deal with the R.N.A.S. and R.F.C., and will contain a specially drawn Supplement, illustrating Enemy Aeroplanes of 1918. That of January 15th will deal with the R.A.F. and will contain a Supplement illustrating Allied Aeroplanes of 1918.

Owing to the continued shortage of paper the supply of these issues is strictly limited, and those who wish to make certain of obtaining copies should order them at once, either from their newsagents, or direct from the Publishing Offices of "The Aeroplane," Union Bank Chambers, Carey Street, W.C.2.

The price will be sixpence per copy, as usual, or eightpence including postage.

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THE DEATH OF A PIONEER ENGINE DESIGNER.

Those who participated in the beginnings of aviation in this country will learn with deep regret of the death of Mr. George Frederick Mort, F.R.S., F.R.A.S., the designer of the famous N.E.C. engine, with which so much experimental work was done from 1909 up to 1911. Unfortunately, lack of business in aeronautical affairs prevented the further development of what promised to be a really great engine, and so the N.E.C. firm devoted itself to more paying propositions.

Mr. G. F. Mort was educated at Bilton Grange and Aldenham, and then at New College, Oxford; but at the end of two years' residence he decided to study naval architecture and engineering. He studied at Glasgow University and University College, London. One who has known him all his life writes:—

His last long vacation while at New College was memorable. He arrived home with two enormous volumes on naval architecture. He had little holiday, for he worked hard studying these books and preparing the design of a racing boat based on a theory of ship design which he had conceived. At the end of the vacation he announced that he had an examination to pass immediately he returned to college. To pass the examination was out of the question since he had in no way prepared himself. So he did not return to Oxford, but went instead to Glasgow University. He exchanged a delightful life and friends for a solitary existence in uncomfortable rooms in a city of dirt and gloom. That incident was typical of his life—his independence of mind, his love of creative work, his utter devotion to his work.

In 1902 he finally decided to devote himself to engineering. He started a small experimental works at Reading, taking up the development of the two-stroke type of explosive engine. He had for some time been deeply interested in the problem of flying, and his hope was to produce an engine which would make the power-driven flying machine practicable. He started his little concern as the New Engine Company, choosing that name not only as descriptive of the work he intended to do, but also from affection for his old college at Oxford.

In 1903 he removed to larger works at Acton and commenced a period of great mental activity and production. Feeling the need of a well-equipped manufacturing business before proceeding further with his engine developments, he designed the new engine or N.E.C. motor-car. This was a very wonderful effort. It must be remembered that he had no practical engineering training, had been in no works except his own small experimental shop, his experience of motor-cars was very slight, he had never been in a car of recent production, and had only ridden in and driven two old and out-of-date rattletraps. He had a tiny little drawing office and one draughtsman, who had absolutely no experience of motor-car design.

The difficulties of his problem were enormously increased by his decision to produce not merely a motor-car on standard lines, but a motor-carriage, a vehicle which should give the owner comfort and accommodation and appearance far beyond that provided by the ordinary car. There were over 1,500 details in the chassis. Every design, every detail was his own work. Every problem he solved not by reference to other cars, but by his own thought. It was a great labour, a great effort of sustained concentration.

This car also demonstrated his considerable artistic abilities, for though he knew nothing of coachwork, he designed the bodies. He started a coachbuilding department and supervised this work. Unfortunately, the car was too unorthodox to appeal to many purchasers, but those who became owners were enthusiastic and continual supporters.

Immediately on the completion of the car design Mr. Mort turned again to his special engine work. Even at that distance of time he clearly foresaw the great war and realised the vital necessity of flying machines both to the Navy and to the Army.

Every detail of an aeroplane engine required the most careful consideration to obtain the necessary strength with the minimum of weight. There was no past standard to refer to, it was all pioneer work. One remarkable instance of his detail work was a six-cylinder crankshaft to transmit 70 h.p. Its weight was only 9 lbs., it could be held upon a man's little finger. Such a design needed much boldness, and its success was due to a complete understanding of and most careful calculations as to stresses. One of these crankshafts is still treasured at the works as a triumph of design. In addition to these mechanical problems Mr. Mort was faced with the special difficulties of the two-stroke type. His methods were radically different from any previous efforts to solve these difficulties.

His first practical aeroplane engine was completed even so early as previous to M. Blériot's flight across the Channel. Starting with an engine of 20 h.p., he produced a series of designs of ever-increasing power ending in the beginning of 1913 with an engine, never quite finished, of 100 h.p.

His most successful engine was one of 50 h.p. This was used by one of the early pioneer flying men (Mr. Alec Ogilvie) on the Wright biplane. Many thousands of miles were flown, and this engine was used in the Gordon-Bennett race at Eastchurch in 1911—the only English engine which ever competed in these races.

With no national support and only infinitesimal sales the pioneer struggled on with ever-lessening resources, endeavouring to keep pace with the rapid progress made in foreign countries, notably in France where such pioneers were lavishly supported, first, by wealthy and patriotic men, and later by the Government. We know now what an unpayable debt of gratitude this country owes to that little band of pioneers of flying who made such a brave struggle against hopeless odds.

Mr. Mort sacrificed all he had in doing what he felt to be his duty. The danger of war and preparation for it were constantly in his mind. He held on with the struggle till means were exhausted and the work collapsed in January, 1913—only 18 months before the war started.

He got his works restarted and transferred to Willesden. He turned to purely commercial work, saving every penny he could spare, intent on restarting his engine work at the earliest moment possible. But the war came before he was re-established.

In the early days he offered his skill and knowledge to the departments interested, but in the upheaval and confusion he was overlooked. Aeroplane engines of foreign design were adopted and their manufacture confided to large engineering firms, many of whom had no experience of such work. To Mr. Mort fell the lot of manufacturing parts for these engines. It was a bitter fate—to have prepared at such cost and then to be the mere maker of these foreign designed parts, even parts of enemy design.

One part, of Austrian design, was, Mr. Mort considered, so faulty that he prepared an alternative, but his design was declined. Later, however, the faults which Mr. Mort anticipated developed to such a serious extent that his design was adopted. This design was patented, but Mr. Mort freely gave the use of it.

He devoted his utmost energy to all the work that came to him. Manufacture in quantity was new to him. By driving himself furiously he devised all the methods and designed all the jigs and tools, and his works became a model of efficiency. He looked on the work as drudgery, and longed to free himself; but so long as the war lasted he meant to do his duty with all his power whatever the cost.

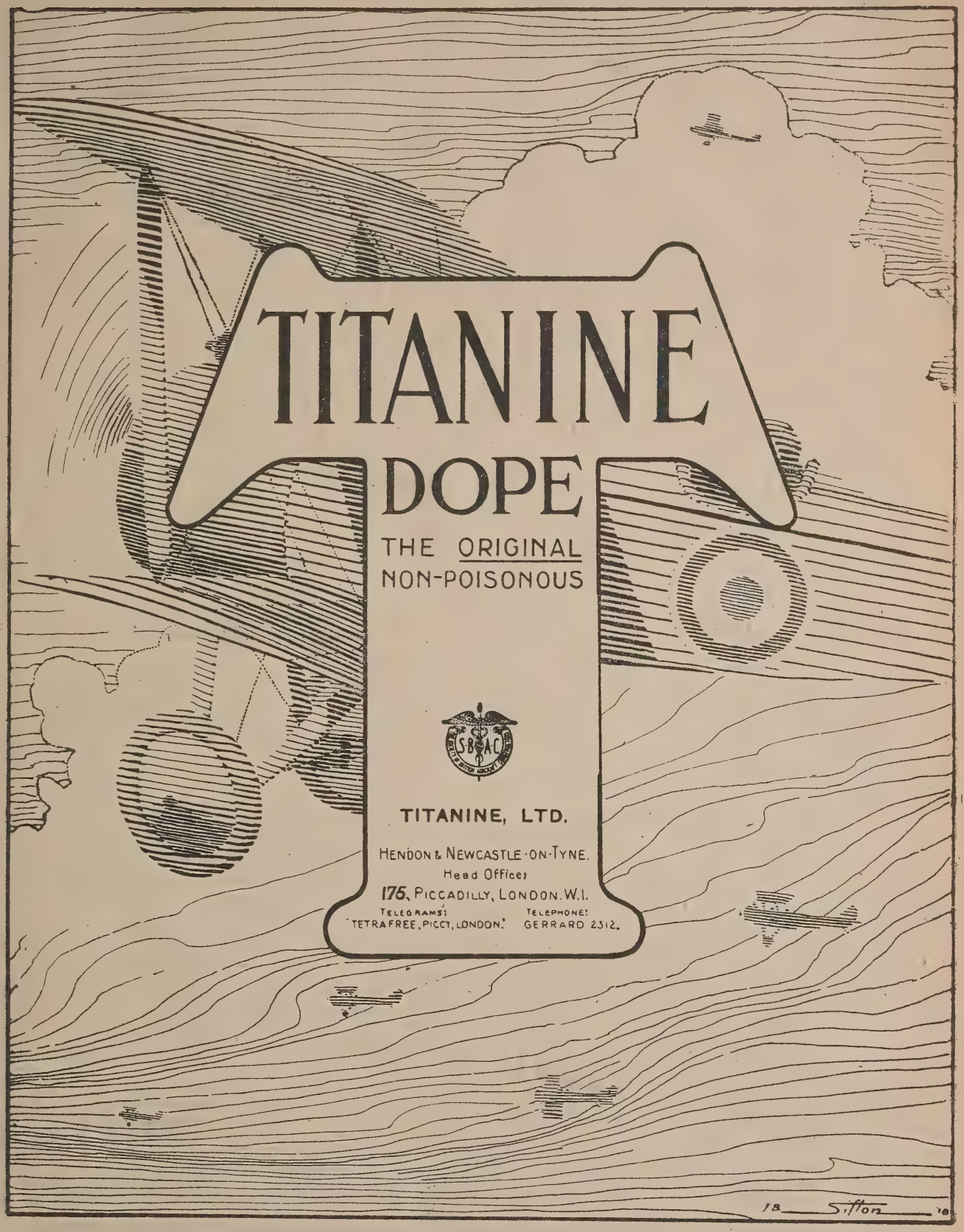
Perhaps this last stage in his career was the most remarkable of all. It is very unusual to find combined in a man the idealist, the experimenter, the inventer, the creator, and the shrewd common-sense of business, the ability to organise a works and manage men and to plot out and supervise production in quantity. Yet these years of war proved he possessed all these last qualities.

Such time as he could spare at week-ends and holidays he devoted to preparing himself for future work. He felt he had fully prepared himself, stored his mind, equipped himself with practical knowledge; and he had laid out for himself a programme of the work he loved. He looked forward to a peaceful quiet life to renew his health and give him the necessary strength. Idle and useless he never could have been. But he had overtaxed his strength; his mind had for long been driving his body, and so, soon after the armistice, when what he longed for seemed in his hand, he was suddenly taken ill and passed rapidly into utter exhaustion and death.

He had a great brain, great power of concentration, a wonderful patient determination to have perfection in every detail of every design. He often said: "If I say a design satisfies me you can be sure that it is absolutely right," and in that he was perfectly justified. But he said, too, that in his work he "sweated blood." For many years he had a hard life; he went through much privation, self-denial, and bitter disappointment. But through all he never lost his courage, never faltered, never doubted where his duty lay, and never failed with all his might to try to do his duty.

He has left a great memory and a great regret with all those who were intimately associated with him in his work. It seems to them a terrible tragedy that he should pass away just when, fully prepared, he was stretching out to the scientific development work he longed to do and felt himself so capable of carrying through. But it was not to be, he has gone to the rest he always denied himself. He put before all else his duty, and in dying he gave his life to his country as did the soldier on the battlefield.

In the years before the war he strove to prepare for the war and paid with all he had; during the war he gave all his strength and paid with his life. He will never be forgotten by those who knew him in his work.


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FROM THE "LONDON GAZETTE."

AIR MINISTRY, Dec. 20th.

R.A.F.—The following temp. appts. are made at the Air Ministry :—Staff Officer, 1st Cl.—(Air).—Maj. R. D. Waterhouse, and to be actg. Lt.-Col. while so empld., Dec. 10th.

Staff Officer, 2nd Cl.—Maj. S. E. Parker, M.B.E., Dec 3rd

Staff Officers, 3rd Cl.—(Air).—Lt. A. J. Clark, and to be actg Capt. while so empld., Aug. 18th to Nov. 26th. (P.)—Lt (actg. Capt.) C. A. Mercer, and to retain his actg rank while so empld., Nov. 15th; Capt. S. Brew, Nov 26th. (Q.).—T. Armstrong (Qrmr. and Maj., T.F., Gen. List) is granted a temp. commn. as Capt., and to be Hon. Maj., April 1st.

FLYING BRANCH.—Maj. G. L. P. Henderson, M.C., to be actg. Lt.-Col. while empld. as Lt.-Col. (A.), Nov. 22nd.

Maj. (actg. Lt.-Col.) R. Hilton-Jones retains the actg. rank of Lt.-Col while empld. as Lt.-Col. (A.) from (S.O.), Dec. 10th

Lts. to be actg. Capts. (A.) :—F. A. Martin, April 11th, L. J. Mann M.C., Dec. 3rd.

Lts. to be Lts. (A.) from Obsr. Officers :—L. V. Foster, Nov. 21st A. E. Hahn, Nov. 27th; D. McC. Martin, Nov. 28th.

Sec. Lt. G. T. H. Pack to be Sec. Lt. (A.) from (T.), April 1st.

Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (A.) :—L. F. Ross, R. L. Frace, May 22nd; H. D. Dade, July 3rd; H. S. McFadden, July 27th; F. Fletcher, Oct. 19th; A. A. Robinson, Nov. 27th; A. A. Adams, L. Dickinson, W. Goldbeck, Nov. 28th; W. J. Tudhope, A. B. Smith, Nov. 29th.

P.F.O. D. H. Grigg (late R.N.A.S.) is granted temp. commn. as Sec. Lt. (A.), June 2nd (since deceased).

The following are granted temp. comms. as Sec. Lts. (A.) :—A. K. Sadler (Lt., Bord. R., T.F.) and to be Hon. Lt., Oct. 16th; O. Greening (Capt., Can. Eng., C.E.F.) and to be Hon. Capt., Nov. 18th; G. H. Baker (Lt., Lond. R., T.F.) and to be Hon. Lt., Oct. 21st: D. W. Clarke (Sec. Lt., R.H. and R.F.A.), J. C. Bowie (Sec. Lt., Sco. Fus., T.F.), Oct. 23rd; F. B. Norris (Sec. Lt., Shrops. L.I., T.F.), Nov. 20th; S. K. Bunce (temp. Lt., York and Lanc. R.) and to be Hon. Lt., Nov. 21st.

Sec. Lt. to be Sec. Lt. Obsr. Officer from (A.) :—G. E. McManus, Aug. 8th.

Sec. Lt. K. R. Bennie to be Sec. Lt. (O.) from K.B., Nov. 3rd.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts., Obsr. Officers :—W. Bolt, June 3rd; W. N. Ashburner, Nov. 15th.

The following are granted temp. comms. as Sec. Lts., Obsr. Officers :—G. Norrish (temp. Sec. Lt., Linc. R.), Aug. 14th; H. F. Richardson (Lt., E. Ont. R., C.E.F.) and to be Hon. Lt., Oct. 19th; F. L. Mitchell (Lt., C. Ont. R., C.E.F.) and to be Hon. Lt., S. G. Cockburn (temp. Sec. Lt., Lpool R.), E. T. Griffiths (Sec. Lt., Lpool R., T.F.), R. Simpson (temp. Lt., Cam. Highrs.) and to be Hon. Lt., Oct. 30th; C. Beardmore (temp. Sec. Lt., N. Staffs), H. Chapman (temp. Sec. Lt., R.E.), C. Curtis (Sec. Lt., Hamps R., Spec. Res.), Nov. 1st; G. W. Browne (Lt., Manitoba R., C.E.F.) and to be Hon. Lt., H. G. Cowley (temp. Sec. Lt., Northn Fus.), Nov 3rd; E. C. Crouch (temp. Sec Lt., Tank Corps), J. F. Blick (temp Sec Lt., Hamps R.), C. B. Hancock (Sec Lt., Worc. R., T.F.), T. W. Wilson (temp. Sec. Lt., York and Lanc R.), Nov. 8th; G. W. Bucklow (temp. Sec. Lt.., Notts and Derby R.), J. J. Leonard (Sec. Lt., Conn. Rang., Spec. Res.), Nov. 13th, F. L. S. Kelman (Lt., High. L.I., T.F.) and to be Hon. Lt., Nov. 27th.

The following Lts. relinquish their comms. on ceasing to be empld. :—Lt. T. M. Evans (Lt., R.E.), Nov. 19th; Lt. F. G. Mathers (Capt., Manitoba R.), Nov. 23rd; Lt. A. W. Lewis, Dec. 2nd; Lt. R. W. White (Capt., E. Ontario R.), Dec. 4th.

The following Sec. Lts. relinquish their comms. on ceasing to be empld. :—Sec. Lt. (Hon. Lt.) J. H. Odell (Lt., Can. F.A.), Dec. 2nd; Sec. Lt. (Hon. Lt.) N. W. Helwig, D.F.C. (Lt., 2nd Cent. Ont. R.), Dec. 4th.

Lt. (actg. Capt.) F. McChesney relinquishes his commn. on acct. of ill-health contracted on active service, and is granted the hon. rank of Capt., Dec. 21st.

The following Lts. relinquish their comms. on acct. of ill-health, and are granted the hon. rank of Lt. :—S. Cooper, J. J. Gowing (contracted on active service), F. H. Hall (caused by wounds), W. B. Hetherington (contracted on active service), H. W. Ingram (contracted on active service), W. N. P. Jenkin, W. de L. Lauder (contracted on active service), G. H. Mackay, C. J. Page (caused by wounds), Dec. 21st.

The following Lts. relinquish their comms. on acct. of ill-health :—Lt. (actg. Capt.) J. E. Gurdon, D.F.C. (Sec. Lt., 3rd Bn. Suff. R., Spec. Res.) (contracted on active service), Lt. L. F. Handford, M.C. (Sec. Lt., 13th Lond. R., T.F.) (caused by wounds), Lt. E. P. Hyde (Sec. Lt., Ches. R., T.F.) (caused by wounds), Lt. S. S. Hume (Lt., 1st Co. of Lond. Yeo., T.F.) (contracted on active service), Dec. 21st.

The following Sec. Lts. relinquish their comms. on acct. of ill-health, and are granted the hon. rank of Sec. Lt. :—E. H. Berry, D. R. Day, W. Kirkpatrick-Crockett, H. Gittins (Sec. Lt., S. Lan. R.) (contracted on active service), A. R. Lee, E. J. Madill, Dec 21st.

Lt. E. Cardinal relinquishes his commn., having been found physically unsuited at Pilot or Obsr., and is granted the hon. rank of Lt., Dec. 21st.

The following Officers are antedated in their appts. as Sec. Lts. (A. and S.), with effect from the dates stated :—W. T. Jones, May 23rd; J. L. Hunter, May 24th.

The following Officer is antedated in his appt. as Sec. Lt. (A.) :—M. S. Dickinson, July 14th.

ADMINISTRATIVE BRANCH.—Lt.-Col. J. W. L. Hunt to be Lt.-Col., from (S. O.), Dec. 8th.

D. Mackenzie (Maj., New Armies) is granted a temp. commn. as Maj., Nov. 18th, seny. April 1st, and to be actg.-Lt.-Col. whilst empld. as Lt.-Col.

The following Capts. (actg. Majs.) retain the actg. rank of Maj. whilst empld. as Majs. :—H. B. Montmorency, from (A.), T. C. Rapp, M.C., from (A.), April 1st.

Capt. F. Steel to be actg. Maj. whilst empld. as Maj., Dec. 6th.

The following are granted temp. commns. as Capts., seny. April 1st, and to be actg. Majs. while empld. as Majs. :—G. R. Turner (Capt. E. Kent R., Spec. Res.), Sept. 21st; C. P. Cowper (R. War. R., Spec Res.), Oct. 4th.

Capts. to be Capts. :—G. N. Martin, from (A.), July 31st; C. A. Narbeth, from (A.), Oct. 1st; R. L. Kennedy, from (S.O.), Oct 11th.

Lt. (Hon. Capt.) (actg. Maj.) S. C. F. Bacon relinquishes the actg. rank of Maj., and to be actg. Capt while empld. as Capt. from (S.O.), Nov. 29th.

Lts. to be actg. Capts. while empld. as Capts. :—J. M. Ogden, April 6th; J. Runciman, Oct. 4th; L. A. Rushbrooke, Nov. 15th (substituted for notification in "Gazette," Nov. 26th.

Sec. Lts. to be actg. Capts. while empld. as Capts.—(Hon. Lt.) J. A. Bonnyman, from (T.), Oct 21st (substituted for notification in the "Gazette," Dec. 6th; R. F. Pyke, Nov. 22nd

Capt. J. A. Carr, D.S.C., to be Lt. from (S.O.), June 15th.

Lts. to be Lts. :—J. H. Cross, from (A.), April 1st; L. S. Thompson, from (A.), Dec. 9th.

D. F. Loftus (Capt., G. Gds.) is granted a temp. commn. as Lt., and to be hon. Capt., seny. April 1st, June 20th.

Sec. Lt. A. J. Litton to be actg. Lt. while empld. as Lt., Oct. 4th.

Sec. Lt. (late Gen. List, R.F.C., an prob.) are confirmed in their ranks as Sec. Lts. :—L. G. H. Aspinall, E. W. Bourne, April 1st; A. R. Knowles, July 31st; H. B. Brown, Sept. 12th; R. S. Swanton, Sept. 14th; H. Royston, Oct. 21st; A. E. Peel, Oct. 24th; J. P. Gill, Oct. 27th; P. Mendoza, Oct. 31st; G. Allison-Beer, P. F. Jefford, Nov. 2nd, W. H. Jones, Nov. 3rd; T. Waitt, Nov. 9th; S. Sprenger, Nov. 21st; J. W. Beskeen, Nov. 22nd; F. L. Howard, Nov. 24th; M. A. V. Pumfrey, Nov. 26th; E. R. Harris, Nov. 29th.

The following are granted temp. commns. as Sec. Lts. :—H. C. Ind (temp. Sec. Lt., R.F.A.), Oct. 5th; J. E. Slattery (Sec. Lt., Lan. Fus., Oct. 7th; J. W. Squire (temp. Sec. Lt., E. Surr. R.), Oct 25th; R. B. Smith (Sec. Lt., Worc. R., T.F.), Oct. 29th.

The following are granted temp. commns. as Sec. Lts., seny. April 1st :—B. Bear, M.M. (Sec. Lt., E. York R.), Sept. 23rd; H. P. Bridges (temp. Sec. Lt., York L.I.), Oct. 8th; F. Hind (temp. Sec. Lt., Lab. Corps), Oct. 19th; T. Gill (temp. Sec. Lt., R. W. Fus.), Oct. 21st; A. J. Corbett (temp. Sec. Lt., Lab. Corps), Oct. 25th.

Sec. Lts. to be Sec. Lts., from (T.) :—H. E. Gridley, Nov. 14th; H. J. Payne, Nov 23rd.

Sec. Lts. to be Sec. Lts. from (A.) :—C. W. Hewson, Oct. 26th; A. T. Taylor, Nov. 8th; L. D. Russell, T. S. Millar, Nov. 9th; V. C. Roxmouth, Nov. 19th; H. C. Bryant, Nov. 21st.

Sec. Lts. to be Sec. Lts., from (O.) :—G. R. Le Cecilia, Oct. 19th; J. H. Deas, Nov. 22nd; J. A. Weatherley, C. G. Smith, Nov 23rd; F. H. Lythall, Nov. 26th; H. Pitkin, Nov. 27th.

Sec. Lt. W. Hopps to be Sec. Lt., from K.B., Nov. 14th.

I. M. Gee is granted a temp. commn. as Sec. Lt., July 3rd.

Appt. of temp. Lt. H. J. Cutler is antedated to Oct. 13th.

Notification in "Gazette," Nov. 12th, concerning F. W. Crawford is cancelled.

The following Lts. relinquish their comms. on ceasing to be empld. :—Lt. A. Tickler (Capt. W. Som. Yeo.), Nov. 6th; Lt. F. H. McCormick (Capt., 3rd (Res.) Batt. R. Dub. Fus.), Nov. 26th.

Maj. E. I. B., Lord Clifton relinquishes his commn. on acct. of ill-health, and is granted hon. rank of Maj., Dec. 21st.

Sec. Lt. A. C. Sutcliffe resigns his commn. to resume dental studies, and is granted rank of Sec. Lt., Dec. 21st.

The following Sec. Lts. relinquish their commns. on acct. of ill-health, and are granted hon. rank of Sec. Lts. :—L. P. Woodill, A. W. T. Wright, Dec. 21st.

The following Sec. Lts. resign their comms. :—J. A. Scott, J. C. E. Stevens, Dec. 21st.

The initials of Lt. R. G. Bishop are as now described, and not as in "Gazette," Nov. 5th.

TECHNICAL BRANCH.—Maj. C. J. Murfitt to be Maj., from (S.O.), Dec. 10th.

Capts. to be actg. Majs. whilst empld. as Majs. :—(Hon. Maj.) H. B. Nutting, Oct. 8th; K. H. McLean, Nov. 5th; G. L. Godden, Nov. 19th.

Capts. to be actg. Majs. whilst empld. as Majs. (Gr. A.) :—J. Gardiner, Oct. 4th, L. H. B. Cosway, Oct. 19th.

Capt. W. C. Lambert to be actg. Maj. (Gr. B.), Nov. 1st

W. J. Palmer (Lt., Gen. List, New Armies) is granted a temp. commn. as Lt., April 1st, and to be actg. Capt whilst holding a special appt. at the Ministry of Munitions, May 21th. (Substituted for notification in "Gazette," Oct. 15th.)

Lts. to be actg. Capts. whilst empld. as Capts. (Gr. B.) :—E. L. French, H. C. Gaze, H. Maccoy, G. B. Neale, G. R. Thorne, Oct. 4th; G. Bowen, Nov. 25th.

Sec. Lts. to be actg. Capts. (Gr. B.) :—Hon. Capts. (actg. Lt.) T. R. Duff, (Hon. Lt.) F. E. Richardson, Oct. 4th.

Lt. W. R. S. Humphreys to be Lt., from (A.), G. A., Nov. 27th.

Sec. Lt. (Hon. Lt.) E. A. Gulson to be actg. Lt. (Gr. A.), Nov. 1st.

(Continued on page 2513.)





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SOME AERONAUTICAL FALLACIES.

By "AFRAES."

6.—THE VARIABLE ANGLE OF INCIDENCE IDEA.

I have been always somewhat struck by the large number of inventors, who, during the last ten or twelve years, have very considerately swelled the resources of the Treasury by taking out patents for aeroplanes, in which the angle of the main plane, relative to the body, is proposed to be altered in flight by some mechanical means.

Generally the means suggested is highly complicated; indeed, it is difficult to see how it could very well be otherwise, and the question of weight, as well as that of strength, appears to be conveniently left on one side. But this aspect of the matter is not that which I wish to discuss, it is rather the principle of the thing.

Imprimis, then, inventors appear to neglect the fact that every aeroplane that flies possesses a mechanism by which the angle of incidence can be altered, and that in an exceedingly simple manner. If such were not the case the machine would simply be uncontrollable in anything but a perfectly homogeneous atmosphere, which, needless to say, our atmosphere never is for longer than a millionth part of a second at a time.

Now, since the elevator, which at most involves only a few extra pounds of weight, performs this variation of angle of incidence duty so efficiently, why, one may well ask, should anyone want to do away with it and put in its place something infinitely less sensitive, infinitely more complicated, and infinitely heavier.

Possibly the inventors concerned have some grudge against the fuselage and fixed tail planes, but they would be very well advised to regard these items as indispensable. Even in inherently stable machines of the Dunne type an elevator of some sort is called for in order that adjustments of longitudinal trim may be made close to the ground, namely, in circumstances in which the machine has insufficient altitude to allow it to correct itself. It seems to me, in this connection, that there is not a great deal to choose between putting one's elevators on the swept-back wing tips and fitting them on a central fuselage.

The only other reason that I can see for the vitality of the variable angle of incidence notion is that the patentees have a rooted objection to any aeroplane flying with its body not absolutely dead along the line of flight.

Now, it is obvious to the meanest intelligence that for the sake of least body resistance the axis of the fuselage should be coincident with the line of flight, and it is also obvious that even when it is flying "all out," increasing altitudes, demanding as they do increases in the angle of incidence of the main planes, cause the body of the accepted type of aeroplane to depart from this optimum attitude.

But, in any case, with a well-designed fuselage the difference in the resistance is not immense, so that if in this connection the variable angle scheme were of value, it would probably be more than neutralised by its necessary addition to weight.

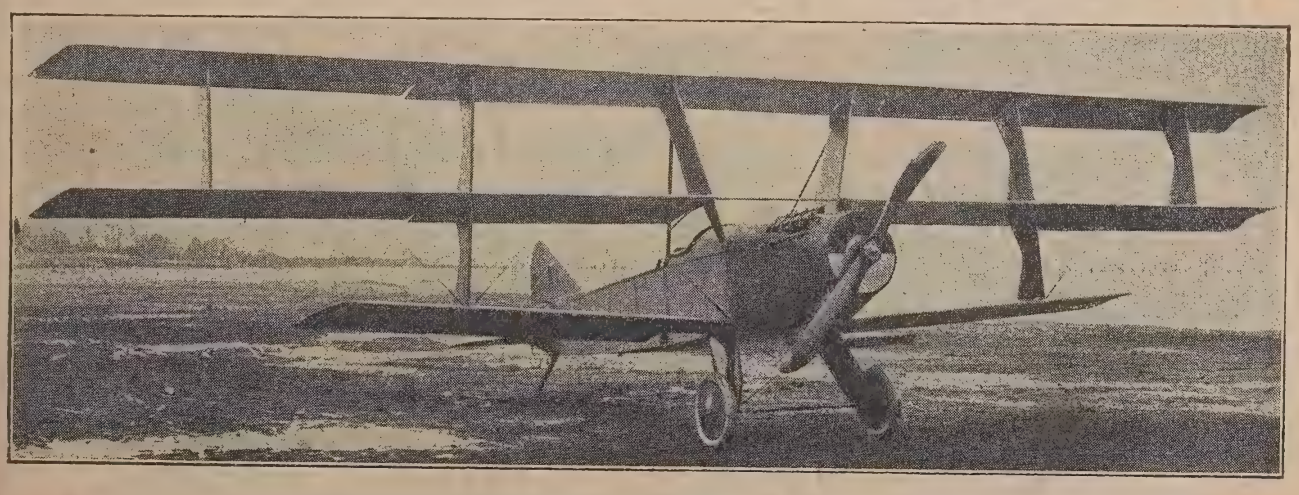
Again, independent adjustments of the angle of the main planes in relation to the body do not in the least do away with the necessity for a controllable elevator, inasmuch as the shift of the Centre of Pressure which must accompany the changes of angle must in some way be compensated for, and it is obviously more convenient to do this by means of a small movable plane than, let us say, by putting the pilot on a sliding seat and moving him to and fro. Though, as a matter of fact, "chasing the C.P." on a bumpy day might be tolerable sport and would conceivably dissipate the tedium of flying.

But, apart from that, it is not difficult to perceive that a machine in which some monstrous contrivance was installed whereby the main planes could be bodily twisted about their transverse axis might be a most serious source of danger, unless, of course, the same mechanisms were connected up to the fixed tail plane.

If not, one could, at the mere turn of a hand wheel, reduce a comparatively safe machine to a condition of "catastrophic instability," as Mr. Lanchester so neatly describes it. And since, in this case, one would want some form of elevator as well, the last state of the machine would be considerably worse than the first. And, even if one could cope with all the gadgets they would at best be practically no better than the good old elevator.

When we consider the question of thrust in this connection it appears, moreover, that, granting its practicability, which is a very wild hypothesis) the variable angle of incidence proposition might introduce a material disadvantage.

In the ordinary aeroplane cocking up the body in order to set it on the climb also cocks up the crankshaft and the plane of the screw's rotation. From the point of view of climbing this seems to me to be desirable—indeed, one recalls that on the R.E.8 type



An Experimental Curtiss Triplane.

the crankshaft is permanently cocked up in relation to the fuselage, in order, one supposes, to enhance its climbing powers.

Thus, as the machine tilts its nose up, more and more of the weight is taken direct on the screw. Also the ability of an aeroplane to "hang on the prop" is by no means a quality to be despised.

Now, it is to be presumed that in the variable angle design the crankshaft is kept normally horizontal. If so, it is almost certain that the climb performance would be seriously impaired, apart altogether from the fact that at one moment the tail plane might be working in the full down-wash of the main planes, and at the next be almost completely out of it.

I have by now said sufficient, I think, to show that there are no advantages worth considering in the proposition, and in doing so I afford myself the hope that "tenners" which would otherwise be squandered on complete specifications may be far better expended.

As for the midnight oil of the inventor, let it rather be burnt in the working out of a practicable variable camber scheme, in which there would be, if the difficulties were successfully overcome, much virtue and no little profit.

None, by the way, need accuse me of creating this fallacy in order to deal with it, for I read an abstract of a variable angle specification in one of the aeroplane papers recently.

Uses of Woodworking Machinery.

By "ETA."

It is not the writer's intention to cover all the ground the title suggests, largely because of its extensive scope; but mainly because he desires to refer to its use as applied to the production of Wood Components in Aircraft.

There may be those who own small factories, such as joinery or cabinet works, who are desirous of assisting in the production of wood parts for aeroplanes, who are prevented from so doing because of the composition of their saw-mill. Although such work may appear to need an extensive saw-mill plant, that is not the case. Anyone possessing quite a limited plant can efficiently and profitably produce such components as planes (main and tail), ailerons, elevators, wood landing gear struts, and struts.

Naturally manufacturers of woodcutting machinery are out to sell machines designed especially for the production of some particular part, such as recessing machine for boxing spars, and copying lathes for struts. Both machines are no doubt of great advantage, both from an efficiency and output point of view, to the contractor who by reason of his larger contract is able systematically to prepare his machined woodwork well in advance. From a sub-contractor's point of view these machines must be considered rather a luxury than a necessity.

By a "limited plant" a saw-mill containing the following machines is meant:—

Circular saw.
Surface planer } May be a combined
Thicknesser. } machine.
Band saw.
Jig saw.
Two double spindles.
One single spindle.
Dimension saw.
Drilling machine.

There may not appear sufficient machines above, but it is quite practical to recess or box spars on a single spindle. Although it may appear a delicate undertaking, the article produced is smooth enough to be left without further cleaning up, apart from papering the stop of the cut.

Also struts may be spindled in a box or jig very simply constructed, and from the writer's experience do not take longer to clean up and finish than those made on a copying lathe or strut-former.

Thousands of struts have been made with only a double spindle by this method which have not only conformed to the requirements of the Inspection Department, but have proved a profitable undertaking to the makers.

One of the most highly-priced wood components requires the least wood-cutting machinery to produce, namely, the airscrew.

The machines required are:—

Band saw.
Surface planer.
Thicknesser.
Double spindle.
Light drilling machine for pilot hole.
Heavy drilling machine for hub and bolt holes.

If four-blade airscrews are made then a tennoning machine would do the half lapping, using the top block only. The remainder of the shaping is done by hand.

Here again one may try and introduce the airscrew shaping machine, but like the recessing machine and strut-former, one can do without it if necessary without great loss.

Do not misunderstand me. There is no intention to minimise the efficiency or value of the above machines, but only to point out that inability to purchase or put down such machines because of space or power should not deter one from entering the business.

One firm in particular with only eighteen employees in that particular section are coming well to the front, if not in quantity in quality, with airscrews, surprising themselves even with their success.

Should one hesitate because of the shortage of timber, there are at present numerous concessions granted in order to economise timber, and possibly, by adopting the concessions, present stocks although of no value or use some months ago might be used now to great advantage.

It is apparent that much is possible to the, shall we say, small man who, knowing his difficulties, sets out determined to overcome them.

In the hopes that I have made quite clear the possibility of producing wood components with only a limited plant, allow me to refer to a few other points worthy of the consideration of the large motor companies of this country.

Travelling up and down the country one wonders why, since our motor companies are buying standing trees, they do not break them up themselves.

Again, why has not the band resaw machine been taken up more? Such a machine is a great wood-power saver. The log frame is a good enough machine for work where grading of quality is not necessary, but how many trees have been planked in recent years by the log frame only to open out unsuitable for the purpose for which they were intended because of internal blemishes. By the band resaw such blemishes would have been seen and provided for by cutting to another size or use.

Large contractors breaking up their own trees would find many worth re-selling at a profit, and some worth selling cheap, instead of being turned over and over, which they would be if planked, and thus becoming a dead loss.

Suitable ash for bending could be selected, so saving the waste which will always occur when trees are planked indiscriminately to say 2 in., 2½ in., 1½ in., 4 in., etc., at a timber merchant's.

One is frequently confronted with the fact that economy in timber, as in many other of our raw materials, is effected too late. There would be more timber saved by economic conversion than by any concession or modification of quality in the construction of the manufactured article.

The salary of a good man could be saved many times over if employed solely to watch and advise on the conversion of timber during its passage through the saw-mill by the reduction of scrap alone, apart from labour saved.

TIMBER CONTROL.

The Controller of Timber Supplies announced on Dec. 19th that he has now completed arrangements for liberating the national stock of imported hardwoods held by the Timber Supplies Department, through the usual pre-war trade channels.

Brokers throughout the country are in possession of the necessary particulars of the stock, and merchants and manufacturers desirous of purchasing should make application through their usual suppliers.

Prices will be revised from month to month, having regard to freight rates and circumstances which may obtain at each period of revision.

AN ENGINEERING OPPORTUNITY.

The Cosmos Engineering Co., Ltd., late Brazil, Straker & Co., Ltd., of Fishponds, Bristol, are prepared to sub-contract forthwith 10 sets of aero-engine components. Inquiries for this work should be sent in immediately. Reasonable prices will be paid. Only firms accustomed to the highest class of work should apply.

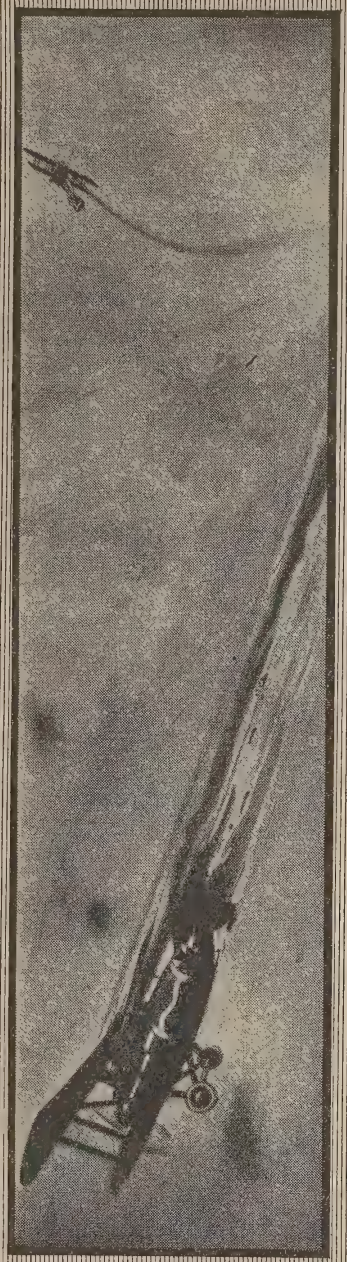
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Immediate deliveries of these cans, either with or without aperture for brush handle, can be obtained from the wholesale agents. All the cans are fitted with bail handles and palette grips, and can be obtained in two types, both prices 6s. A fully illustrated list can be obtained on application to Brown Bros., Ltd., Great Eastern Street, London, E.C.

ALUMINIUM ORDERS SUSPENDED.

In the "London Gazette" of Dec. 24th, 1918, appeared an Order made by the Ministry of Munitions suspending the operation of the three Orders relating to trading in aluminium, and dated respectively Dec. 2nd, 1916, Feb. 17th, 1917, and Feb. 28th, 1917.



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INDIA AS A TESTING GROUND.

By "Medway."

It seems very much as if India were to become the great Imperial testing ground of commercial aeronautics in all its principal forms. People who write about India can be divided into a number of classes. There are those who really understand the East and the psychology of the Eastern. There are those who understand the Anglo-Indian, but really know little or nothing of the East in its natural aspects. There are those who have made a profound study of India and everything connected with its government and its people in the course of three or four weeks. These are mostly members of Parliament, political agitators, or the professors of weird creeds and beliefs. Lastly there is the person who knows nothing whatever about India, and rather less about the people who inhabit it.

Unprejudiced Ignorance.

For myself, I approach the subject with that complete freedom rendered possible only by absolute ignorance. I picture India mainly through the eyes of Rudyard Kipling in his youth, as a place where flirtatious married ladies dance with wicked majors in the hill stations while neglected husbands frizzle in the plains. In the background are a few civil servants afflicted either with the horrors or suicidal mania, or else suffering from delirium tremens in an advanced form. Over the whole is a mantle of officialdom which weighs down everybody to whom the hand of influence is not stretched out.

All this has little or nothing to do with commercial aviation, unless we may assume that officialdom as it exists in India will succeed in making as big a mess of this new business as it apparently did with many of its medical and other arrangements during the war. Judged by its past record, one would rather suspect that the Government of India will try to start a few aerial services with the cheapest possible machines and will entirely forget to make any provision in advance in respect of such trifling matters as fuel or landing grounds.

The Proper Aspect.

However, Major-General W. G. M. Salmond, faced with the rather awe-inspiring job of conferring with the Government of India "regarding the organisation and establishment of the aerial route" may meet with greater success than past events would lead one to hope. He is apparently to be backed up by Lord Montagu, though the latter is not endowed with that official status in the matter which was seemingly accorded to him in a rather sugary article recently contributed to the "Times." Lord Montagu is at least an enthusiast with a decent general knowledge of aerial matters. Furthermore he has made a special study of the possibilities of aviation as applied to India. Thus we have both official and unofficial influences at work, and those influences are being applied just at the right moment, and are being brought to bear on a country the educated natives of which are endowed with first-class brains and very ample imaginations, backed in a good many cases by adequate financial resources. The complete possibility of running a regular service between England and India is now absolutely established. It remains only for people with some vision to foresee the immense value of the developments that will result from the inauguration of such a service.

Not the least of these, I venture to think, will be the vastly closer touch between the Press of any two countries connected by an aerial line. I refer not only to the daily Press, and to news with which the cable services can already deal adequately, but rather to the improved opportunities for the expression, at a distance, of reasoned opinion and comment on current events before those events themselves have gone stale.

Similarly, in a big country like India one would expect to find the local Press in the smaller centres very much influenced by the more important journals and writers, as soon as it becomes possible to convey comprehensive articles and well-informed comments at such a speed that the local paper benefiting by the aerial service can put picked matter before its readers long before that matter in its printed form can reach them by railway delivery of the bigger journals.

Political Advantages.

The political consequences of a general familiarisation with the capabilities of the aeroplane would also be great. When the gentle savage of the frontier tribes indulges in his pet pastime of murder and mutilation, the organisation of a punitive expedition can be reduced to the dispatch of one or two aeroplanes with a few bombs, and the knowledge that this sort of reply is always likely to be made, and made promptly, would have a very salutary effect.

Having already admitted that I know nothing about India, I do not propose to indulge in further opinions on matters of this kind. I do feel, however, that I have a right to say that India is a fine ground for experimental commercial aviation, and that, if official and unofficial enthusiasm, pulling together, can really get things moving in India on prompt and comprehensive lines, we shall obtain experience which, in a very few years, if not months, will be of inestimable value to every part of the British Empire.

THE SUICIDE OF THE S.M.M. & T.

In the early stages of the war, when Turkey decided to come in on the side of Germany, one of the American papers published a very neat cartoon. It depicted the bird so intimately associated in our minds with the Christmas season resting its head upon a block of wood and manipulating an axe in one claw in such a way as to lead inevitably to an early separation of the spinal cord. Underneath the picture were the words, "Now for it!"

I do not suggest that there is anything particularly Christmassy about the S.M.M. & T., but the general situation in which that Society is placing itself has reminded me of the picture which I have tried to describe. The Society is, however, more in the nature of an ostrich. Having presumably had its head firmly wedged in the sand for the entire period of the war, it now comes up smiling and blissfully ignorant of the fact that things have changed during the past four years or so. Even the most partisan of party politicians could hardly excel it in this respect.

Show Promotion as a Creed.

The S.M.M. & T. has always been mainly a show-promoting body. It is quite good at the job, and is inordinately proud of the fact. Its cherished possession is a "Bond," which it regards as slightly more sacred than the laws of the Medes and Persians. It is firmly convinced that anyone who does not sign this Bond is for ever damned. He has no hope of salvation in this world or the next. The Bond is in effect a sort of Athanasian Creed, the main items of which are:—

I believe in the S.M.M. & T. and everything that it happens to arrange for me.

I believe still more in taking a back seat and leaving the front row vacant for the foreigner.

I believe that if I try to do without the Society I shall immediately go into liquidation.

I believe that the Society is the only body that can possibly organise an exhibition, and there is an end of the matter.

The only signs of a glimmering of doubt in the Society's own mind as to the unassailable character of its position are revealed by its rather undignified attempts to secure a monopoly of show-promoting by cornering all the suitable places in which shows might be held, and then hurriedly announcing its intentions of getting to business and thereby warning other people to keep off the grass.

A Would-be Aerial Barnum.

The S.M.M. & T., according to itself, is going to promote heaps and heaps of shows for almost everybody, whether they like it or not. If members of the family of which the Society is the self-appointed foster-father happen to resent the idea, they have got to put up with it on the understanding that daddy knows best what is good for them. Now, so far as the Aircraft Industry is concerned, I do not imagine for the moment that the S.M.M. & T. will be allowed to have things all its own way. That younger but very much more virile body, the S.B.A.C., is an organisation which knows its own mind, has its own policy,

and is not given to being bluffed out of what it believes to be the proper course of action.

It would have been more graceful if the S.M.M. & T., before announcing its intention to organise an exhibition for an Industry which it certainly does not represent fully, had consulted the organisation which really does represent that Industry. Instead of doing so, an attempt was made to rush the position on the strength of an arrangement which may or may not prevent the S.B.A.C. from holding a show where it likes and when it pleases.

The Prospect of Revolt.

I should be very much surprised if the S.M.M. & T. gets the better of the bout. For one thing, it is past its prime, and is by no means certain of the unanimous support of its own members. This support is, in fact, so uncertain that the odds are at least ten to one that, if the old Society persists in its ways, it will at least succeed in cutting a wing if not a head off its own carcass. The lack of security in its position, and its weakness if it comes to a real fight, are accentuated by the fact that even the British motor industry as a whole is by no means certain that it is not time to kick over the traces formed by the Bond.

It is a beautiful self-sacrificing ideal to let the foreigner occupy a stand in the full glare of the lime-light while the young British concern sleeps peacefully in an obscure corner, where darkness and silence reign and visitors seldom intrude. We are a wonderful nation, and not the least wonderful thing about us is our anxiety to give all our competitors the best possible chance of thrashing us. We have, however, recently discovered that this sort of thing may go too far, and that sooner or later the time comes to stick up for oneself.

The Parting of the Ways.

My impression is that the British motor industry is just about reaching the parting of the ways. Its digression may be delayed for a time, but cannot be delayed for ever. It is encouraged to digress by the fact that the S.M.M. & T. is greedy, not only for motor shows, but for aircraft and other exhibitions. Once the standard of revolt is raised, as it certainly will be—and, in fact, has already been—in the aircraft camp, secessions will become more and more numerous. Firms which are interested both in motors and in aircraft, and who, in the latter capacity, stand by the S.B.A.C., will be condemned criminals as breakers of the Bond. Every one of these firms will form a storm centre for insurrection within the motor industry itself.

In fine, the S.M.M. & T. has tried to be too clever, an attitude of mind for which it is not fitted either historically or intellectually. Hence my title. The old Society has, I say, set out to commit suicide. The implement it uses for the purpose is less immediately effective than a hatchet. It is more in the character of a poison, which will work slowly, but not for that reason with any the less certainty. As a really powerful factor, the S.M.M. & T. has doomed itself by its own action. In future, it may remain a show-promoting body—even now it is little more—but it will only be a show-promoting body in the sense that it will be tolerated and allowed to perform service for other organisations more solid, more progressive and less divided up into sections, the interests of which are intrinsically incompatible.

Termagant.

AERONAUTICS IN SCANDINAVIA.

A Swedish correspondent who is very closely in touch with aeronautical developments in that country writes that already the Germans are taking steps to secure a hold on the Scandinavian market for aircraft. So quick have they been in this matter that between the signing of the Armistice and the end of November Stockholm had already received visits from two-motored German aeroplanes of the most modern design for advertising purposes, and German seaplanes had been offered to Sweden at very tempting figures.

There is undoubtedly a very big market in Sweden for aeroplanes, and particularly for seaplanes, in view of the fact that the Swedish coast and the whole of the Baltic between Sweden and Finland is a mass of islands which provide shelter for seaplanes in case of trouble and also prevent the rising of very heavy seas.

The Swedish correspondent in question suggests that it should be possible to arrange an exhibition of British and French aircraft in Scandinavia by about March next, and inquires whether, in the event of such a show being held in any Scandinavian city, British and French contructors would be willing to show their products in the same hall with German aeroplanes, and, he adds, if the Peace is then a reality. The question is an eminently reasonable one, for, as the correspondent points out, internationality and strict neutrality would be a necessity if the official aero clubs of Scandinavia are to have anything to do with such a show. The question is one very well worth considering by the S.B.A.C. and by the Air Ministry, because if British machines are not allowed to be shown in Scandinavia early in the New Year, it simply means that the Scandinavian business will go to the Germans, whose products are naturally better known than those of the British, owing to the fact that the Germans have held the command of the Baltic for so long a period, and because the British Navy has done so little to impress the Scandinavian countries with the ability of British naval aircraft.

As regards developments in Scandinavia, the following notes will be of interest.

Sweden.—Considerable interest is taken in the possibilities of civil aerial transport by the commercial classes in Sweden. One company, the Thulin Aeroplanfabrik, has already formed a subsidiary firm for aerial traffic purposes. Another, the Baltiska Luftfartsrederiet, is in course of formation with a capital of one million crowns. Others are under consideration, but no particulars are as yet available.

Denmark.—A company, promoted to a great extent by Herr Willy Wulff, is being formed, and shows every sign of united strength.

Finland.—Even in Finland, disturbed as it is by academic experiments in the drafting of constitutions, aerial transport is not forgotten, and a company with a capital of 25 million crowns is already in existence.

Norway.—Though Norway is not without its aerial traffic companies, no air lines are yet in operation.

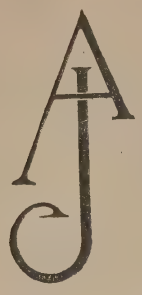
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A Neutral Correspondent writes:—

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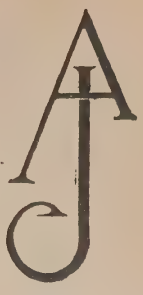
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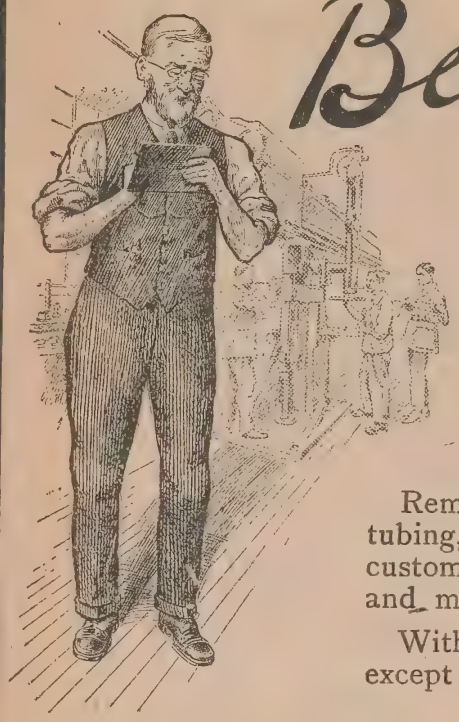
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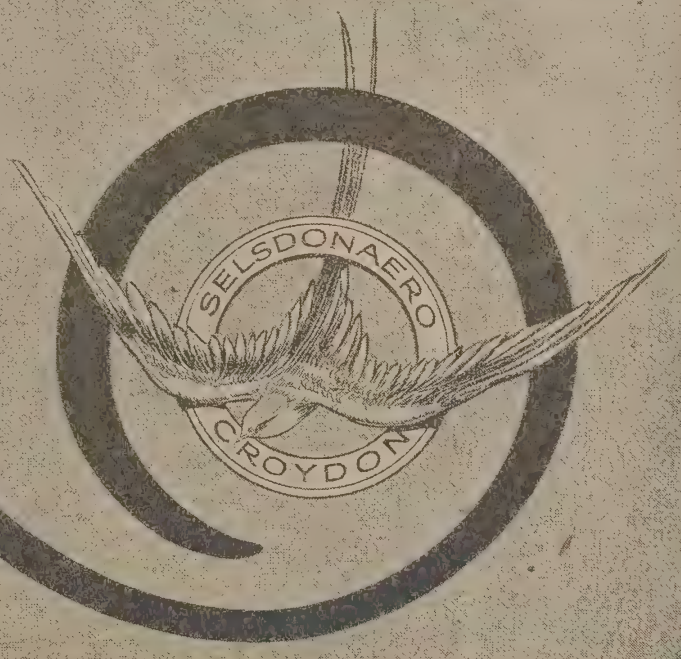
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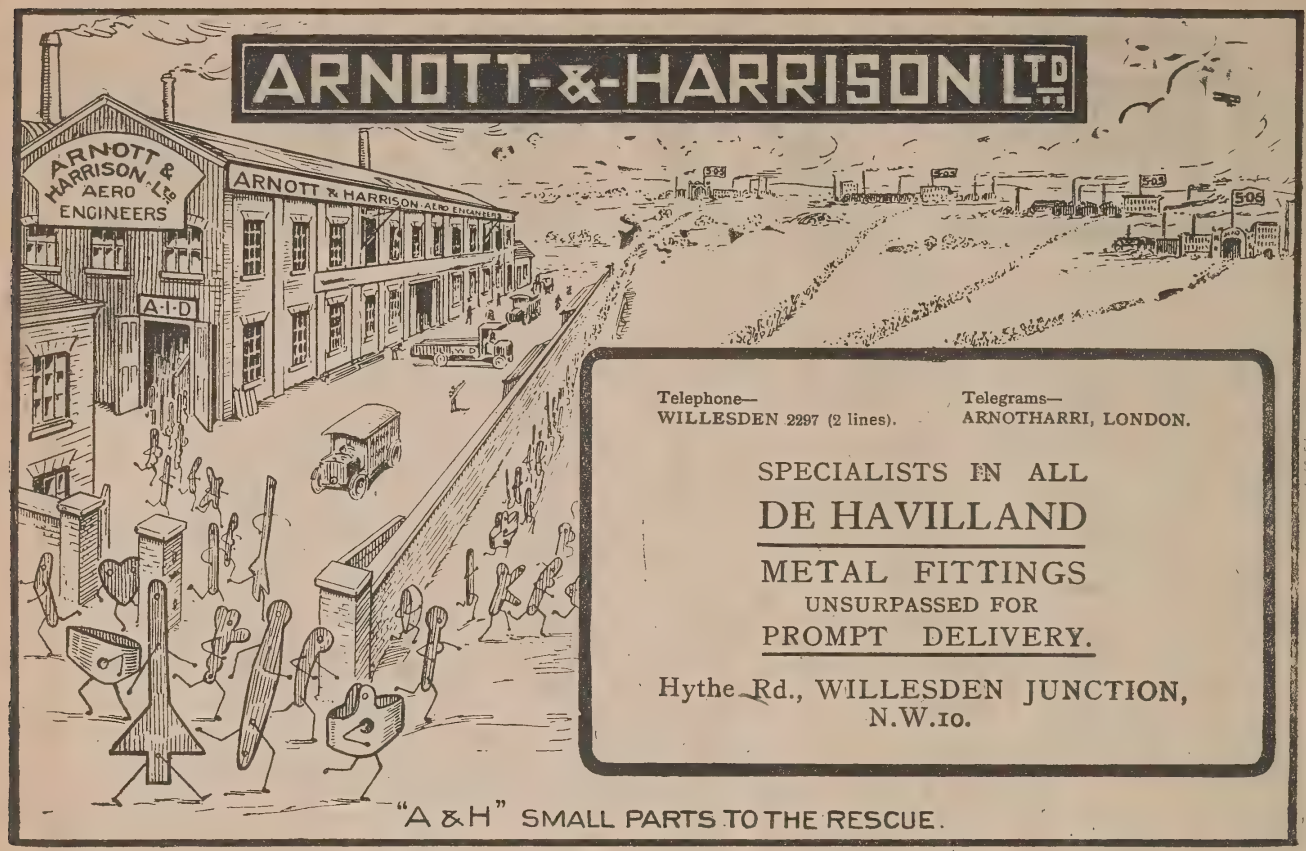
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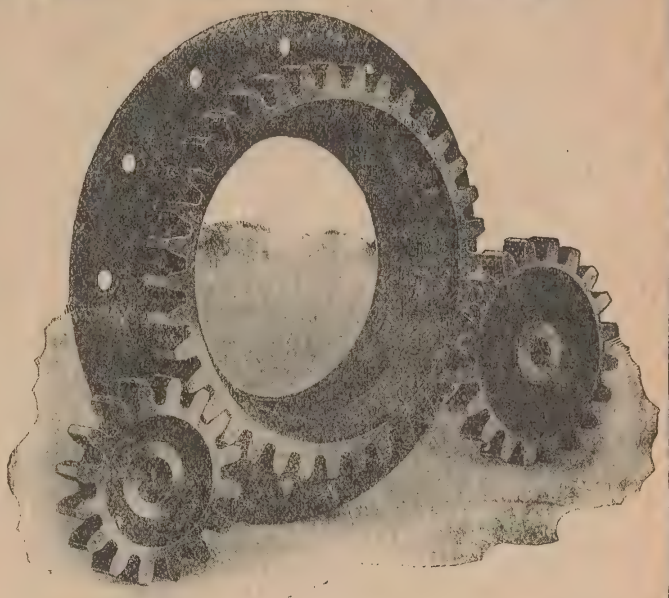
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The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Thompson Bros (Bilston), Ltd, Bradley, Bilston, England. "Thompson Bros, Bilston." Bilston 10.

Cords, Tapes, and Threads—

MacLennan, J., & Co, 30, Newgate Street, E.C.1. And at Glasgow. City 3115

Dopes—

Titanine, Ltd., 175, Piccadilly, W.1. "Tetrafree, Piccy, London." Gerrard 2312

British Cellulose Co., 8, Waterloo Place, S.W.1. "Cellutate, London." Regent 4046.

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London." Gerrard 280.

Cellon, Ltd., 22, Cork Street, London, W.1. "Ajawb, Reg, London." Gerrard 440.

Robt. Ingham Clark & Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Engines and Parts—

Allen, W. H., & Co., Ltd., Bedford. "Pump, Bedford." Bedford No. 1.

Arrol-Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.

Beardmore Aero Eng, Ltd., 112, Great Portland Street, W.1. "Beardmore, London." Gerrard 238.

Dudbridge Iron Works, Ltd. (Salmson), 87, Victoria Street, London, S.W.1. "Aeroflight, Vic, London." Vic. 7026.

Gordon Watney & Co., Ltd., Weybridge. "Mercédès, Weybridge" Weybridge 550 (7 lines).

Green Engine Co., Ltd., Twickenham. Richmond 1203.

Gwynnes, Ltd., Hammersmith, W. "Gwynne, Hammersmith." Hammersmith 1910.

Napier & Son, D., Ltd., 14, New Burlington Street, London, W., and at Acton, W. "Nitrifier, London" Gerrard 8926.

Rolls-Royce, Ltd., 14 and 15, Conduit Street, W.1. "Rolhead, London." Gerrard 1654-5-6.

Sunbeam Motor Car Co., Ltd., Wolverhampton. "Moorfield, Wolverhampton." Wolverhampton 985.

The Gnôme & Le Rhône Engine Co, Ltd., 27, Buckingham Gate, S.W.1. "Elevenfold, London." Walthamstow 811 (2 lines).

Walton Motors, Ltd., Walton-on-Thames. "Motors, Walton-on-Thames." Walton-on-Thames 220.

Electrical Accessories—

Belling & Co., Montague Road, Upper Edmonton, N.18. "Belling, Edmonton." Tottenham 1984

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing, Eusroad, London." Museum 70.

Premier Electric Heaters, Ltd., 258, 259, and 360, Bradford Street, Birmingham. "Fahrenheit, Birmingham." Midland 981.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.

Electric Cables—

E. Kalker and Co., Coventry "Kalker, Coventry." Coventry 24X.

Johnson & Phillips, Ltd., Charlton, London. S.E.7. "Juno, London" Central 2207; London Wall 1564.

Electric Lighting and Power—

Johnson & Phillips, Ltd., Charlton, London, S.E.7. "Juno, London." Central 2207; London Wall 1564.

Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W. "Installing, Eusroad." Museum 70 (4 lines).

Electro Platers and Metal Polishers' Engineers—

W. Canning & Co., 133-137, Great Hampton Street, Birmingham. "Materials, Birmingham." Birmingham 3622 Central (3 lines).

Flare Lights—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flexible Shafts—

Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Fluxes—

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

Flying Schools—

Bournemouth Aviation Co., Ltd., Talbot Village, Bournemouth. "Etches, Winton." Bournemouth 1160.

Furniture (Office)—

Cooke's (Finsbury), Ltd., Finsbury Pavement House, London, E.C.2. London Wall 573 and 6179.

Galvanising—

Boulton & Paul, Ltd., Rose Lane, Norwich. "Aviation, Norwich" Norwich 851.

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Gauges—
J. A. Prestwich & Co., Northumberland Park, Tottenham, N.17.

Gears—
Moss Gear Co., Ltd., Thomas Street, Aston, Birmingham. "Mosgear, Birmingham." East 407.

Glue—
Cannon, B., & Co., Ltd., Lincoln. London Office, 110, Cannon Street, E.C.4. "Beecolin, Cannon, London." City 1206.
Improved Liquid Glues Co., Ltd., Gt. Hermitage Street, E. (Croid.) "Excroiden, Phone, London." Avenue 4611-2.
Mendine Co., 8, Arthur Street, E.C. Bank 5873.
Oldroyd, Wm., & Sons, Ltd., 9, Mincing Lane, E.C.3.

Goggles—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Hack Saw Blades and Machines—
Victor Saw Works, Ltd., 2 and 3, West Street, Finsbury Circus, London, E.C. "Vicsaw, Phone, London." London Wall 1880.

Heating and Ventilating—
Chas. P. Kinnell & Co., Ltd., 65 & 65A, Southwark Street, London, S.E.1. "Kinnell, London." Hop 372 (2 lines).
Musgrave & Co., Ltd., Belfast. Telegrams—"Musgrave, Ltd., Belfast."
Sturtevant Engineering Co., Ltd., 147, Queen Victoria Street, London, E.C.4. "Sturtevant, London." Central 7121 (6 lines).
The Thames Bank (Blackfriars) Iron Co., Ltd., Upper Ground Street, London, S.E.1. "Hot Water, Friars, London." Hop 763.

Hollow Spars—
McGruer Bentwood Hollow Spar Co., Commercial Wharf, Lambeth, S.E. "Gabrielson, Watloo, London." Hop 718.

Instruments—
British Wright Co., Ltd., 33, Chancery Lane, W.C.2. Holborn 1308.

Instruments (Scientific, Altimeters, etc.)—
The Cambridge Scientific Instrument Co., Ltd., Cambridge. "Instrument, Cambridge." Cambridge 642.
Short & Mason, Ltd., Macdonald Road, Walthamstow, E.17. "Aneroid, Phone, London." Walthamstow 180.

Leather for Aeroplanes—
George Angus and Co., Ltd. Newcastle-on-Tyne. City 72. Central 956-7. Quayside City 73.

Leather Cloth—
New Pegamoid, Ltd., 134, Queen Victoria Street, London. "Pegamoid, Cent, London." City 9704 (2 lines).

Magneto Driving Pieces—
Herbert Terry & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61.

Magnetos—
The British Lighting & Ignition Co., Ltd., 204, Tottenham Court Road, W.1. "Vicksmag, Phone, London" Museum 430.
The British Thomson-Houston Co., Ltd., Lower Ford Street, Coventry. "Asteroidal, Coventry." Coventry 278.
The M-L Magneto Syndicate, Ltd., Coventry. "Corlton, Coventry." Coventry 1008-1009.

Metal Casement Manufacturers—
Henry Hope and Sons, Ltd., 55, Lionel Street, Birmingham. "Conservatory, Birmingham." Central 999 (2 lines).

Metal Manufacturers—
Clifford, Chas., & Sons, Ltd., Birmingham. "Clifford, Birmingham." Central 42-43. Avenue 1432.

Metals in General—
Samuel Mercer & Co., 198, Upper Thames Street, E.C.4. "Reconciled, Cannon, London." City 6242.
Pritt & Co., 46, Fenchurch Street, London, E.C.3. "Poetry, Fen, London." Avenue 995, 996, and 7996.

Metal Parts and Fittings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Aeroplane General Sundries, Ltd., Fulwood House, Fulwood Place, High Holborn, W.C. "Zeppiskout, Holborn, London." Holborn 4959.
Aircraft Supplies Co., Ltd., Ascot House, 125, Long Acre, W.C.2. "Upcast, Rand, London." Gerrard 276 (2 lines).

Metal Parts and Fittings (continued)
Arnott & Harrison, Ltd., Hythe Road, Willesden Junction. Willesden 220.
Bayliss, Jones & Bayliss, Ltd., Wolverhampton. (Bolts and Nuts.) "Bayliss, Wolverhampton." Wolverhampton.
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Lombard Rim and Tube Co., Lombard Street, Birmingham. "Lombardic, Birmingham." Midland 211 (2 lines).
Mann, Egerton & Co., Ltd., 177, Cleveland Street, London, W.1. "Installing. Eusroad, London." Museum 70.
Mountford, Fredk., Ltd., Lifford, Birmingham. "Fremo, Birmingham" King's Norton 261.
Rubery Owen & Co., Darlaston, South Staffs.
Sankey, Joseph, & Sons, Ltd., Wellington, Shropshire. "Sankey, Wellington, Salop." Wellington 66.
The Pulvo Engineering Co., Ltd., 10 to 16, Dane Street, High Holborn, London, W.C.1. "Pulvipult, Phone, London." Holborn 410.
The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.
The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London." Willesden 2480.
Thompson Bros., Ltd., Bradley, Bilston. "Thompson Bros., Bilston" Bilston 10.
Wooler Engineering Co., Ltd., Old Oak Common Lane, Willesden Junction, N.W.10.

Metal Shearing Tools—
Montgomery, Smith & Co., Ltd., Keynsham, near Bristol. "Ingenuity, Saltford." Keynsham 21.

Metric Bolts—
Cashmore Bros., Hildreth Street, Balham, S.W. Battersea 415.
Rubery Owen & Co., Darlaston, South Staffs.

Miscellaneous—
Anderson, D., & Son, Ltd. (Roofs) Belfast. "Anderson, Belfast." Belfast 4033-4034-4035.
British Metal (Kingston), Ltd., Kingston-on-Thames.
Brown Bros., Ltd., Great Eastern Street, E.C.1. "Imbrowned, Bethroad, London." London Wall 6300.
Herbert Frood Co., Ltd., Chapel-en-le-Frith. "Frodobrake, Birmingham." Central 793.
MacLennan, J., & Co., 30, Newgate Street, E.C.1., and at Glasgow. Tapes, Cords and Threads. City 3115.

Motor Cars—
Arrol Johnston, Ltd., Dumfries. "Mocar, Dumfries." Dumfries 281-282.
Mann, Egerton & Co., Ltd., 379/381, Euston Road, London, N.W.1. "Manegecar, Eusroad, London." Museum 70.
Standard Motor Car Co., Coventry. "Flywheel, Coventry." Coventry 530 (4 lines).

Nameplates and Labels—
British Metal (Kingston), Ltd., Kingston-on-Thames.
The Clegg Metal Engraving Co., Worthing "Clegg, Worthing."

Observation Panels—
Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London." Regent 1340.

Oils—
C. C. Wakefield & Co., Ltd., Wakefield House, Cheapside, E.C.2. "Cheery, Cent, London." Central 11305 and 13466.

Parachutes—
E. R. Calthrop's Aerial Patents, Ltd., Eldon Street House, Eldon Street, London, E.C. "Savemalvo, Ave, London." London Wall 3266-3267.
C. G. Spencer and Sons, Ltd. (See under "Balloons").

Piston Rings—
British Chuck & Piston Ring Co., Coventry "Rings, Coventry." Coventry 723.
The Standard Piston Ring and Engineering Co., Ltd., Don Road, Sheffield. "Ocean, Sheffield." Sheffield 2149.
Allen & Simmonds, Ltd., Reading

Presswork—
Rubery Owen & Co., Darlaston, South Staffs.
Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch" Redditch 61.

Propellers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Boulton & Paul, Ltd., Rose Lane, Norwich, "Aviation, Norwich." Norwich 851.
Ebora Propeller Co., 11 & 12, Surbiton Park Terrace, Kingston-on-Thames "Ebora, Kingston." Kingston 672.
Integral Propeller Co., Ltd. "Avipro, Hyde, London." Hendon 9. Kingsbury 104.
Lang Propeller, Ltd., Weybridge. "Aerosticks, Weybridge." Weybridge 520-521
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich" Norwich 482 (4 lines).
Oddy, W. D., & Co., Leeds. "Airscrews, Leeds." Leeds 20547-8.
The Pegasus Aircraft Co., Ltd., Totterdown Street, Tooting, S.W.17 Streatham 1242.
Stanley Aviation Co., 67, Kingsland Road, E.2. City 8347.
Westland Aircraft, Yeovil. "Aircraft, Yeovil. 129

Propeller Cases—
The Camden Construction Co., Ltd., 289, High Street, Camden Town, N.W.1.

Pyrometers—
The Foster Instrument Co., Letchworth, Herts. Foster Instruments, Letchworth.

Radiators—
Gallay Radiator Co., Ltd., 198, Great Portland Street, W.1. "Galyradico, Wesdo, London." Mayfair 4826.

Rawhide Hammers—
Ira Stephens, Whitelands Leather Works, Ashton-under-Lyne. "Stephens, 709, Ashton." Ashton 709.

Rigging for Aircraft—
Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466

Rubber Tubing & Accessories—
Hancock, James Lyne, Ltd., 266, Goswell Road, London, E.C.1. "Masticator, Isling, London." City 3811 and 3812.

Safety Belts—
C. H. Holmes and Son, 38, Albert Street, Manchester. "Semlon, Manchester." City 4432.

Screw-driving Machines—
Russell Bros. (Redditch), Ltd., Littleworth, Redditch. "Inventors, Redditch." Redditch 74

Seaplane Manufacturers—
Blackburn Aeroplane & Motor Co., Ltd., Olympia, Leeds. "Propellors, Leeds." Roundhay 345 (3 lines).
Mann, Egerton & Co., Ltd., Norwich. "Motors, Norwich." Norwich 482 (4 lines).
Short Bros., Rochester "Seaplanes, Rochester." Chatham 627.
Supermarine Aviation Works, Ltd., Southampton. "Supermarin, Southampton." Woolston 37.

Seats for Aeroplanes—
Bowser, E., 50, Park Lane, Leeds. Leeds 21053.

Searchlights & Landing Lights—
Brown Bros., Ltd., Gt. Eastern St., E.C.1.
Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).
The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesden Junction, N.W.10. "Rodynalite, Phone, London."

Shackles—
British Gold Shell Ring Co., Ltd., Hounslow, Middlesex. "Golshel, Hounslow." Hounslow 254.

Sheet Metal Pressings—
Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines).
Blackburn Aeroplane and Motor Co., Ltd., Olympia, Leeds "Propellors, Leeds." Roundhay 345.
W. H. Briscoe & Co., Ltd., 51 and 52, Park Street, Birmingham. "Brisk Bham." Central 550.
British Metal (Kingston), Ltd., Kingston-on-Thames.
London Aluminium Co., Ltd., Westwood Road, Aston, Birmingham. East 497 Birmingham.
Rubery Owen & Co., Darlaston, South Staffs.

Sheet Metal Work—
The Acetylene Corporation of Great Britain, Ltd., 49, Victoria Street, S.W.1. "Flamma, Vic, London." Vic 4830.
British Metal (Kingston), Ltd., Kingston-on-Thames. [Staffs
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The Selsdon Aero & Engineering Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Selaero, Phone, London." Regent 1181.

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"The Aeroplane" Buyers' Guide.—*continued.*

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Imperial Light, Ltd., 123, Victoria Street, Westminster, London, S.W.1. "Edibrac, 'Phone, London." Victoria 3540 (3 lines).

The Snercold Engineering Company, Ltd., Vicarage Road, Hampton Wick, Middlesex. "Snercold, Kingston-on-Thames." Kingston 1154.

Solder Manufacturers—

Samuel Mercer & Co., 108, Upper Thames Street, E.C.4. "Reconciled Cannon, London." City 6342.

Sparking Plugs—

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Lodge Sparking Plug Co., Ltd, Rugby. "Igniter, Rugby." Rugby 235.

Ripault, Leo. & Co, Ltd. (Oleo Plugs), 64a, Poland Street, W.1. "Ripault, Reg, London." Gerrard 7758.

The Robinhood Engineering Works, Ltd., Newlands, Putney Vale, S.W.15. Makers of KLG Plugs. "Kaclgec, 'Phone, London." Putney 2132-3.

Springs—

Dart Spring Co., West Bromwich. "Dart, West Bromwich." West Bromwich 322.

Terry, Herbert, & Sons, Ltd., Redditch, "Springs, Redditch." Redditch 61 (3 lines).

Steel—

Allen, Edgar, & Co., Ltd., Sheffield. "Allen, Sheffield." Sheffield 4607.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Firth, Thos., & Sons, Sheffield "Firth, Sheffield." Sheffield 3230 to 3237.

Nicklin, Bernard & Co., Birmingham. "Bernico, Birmingham" Smithwick 224.

Spear & Jackson, Ltd., Ætna Works, Sheffield. "Spear, Sheffield." Central 4522-3-4.

Steel Stamps and Markings—

John Meerloo & Sons, Cleveland Street, Mile End, E.1. "Dayhur, 'Phone, London." East 3331 (2 lines).

Steel Tubes for Aeroplanes—

Accles & Pollock, Ltd., Oldbury, Birmingham. "Accles, Oldbury." Oldbury 111 (3 lines)

Taper Pins—

Mountford, Fredk. (Birmingham), Ltd., Lifford, Birmingham. "Fremo, Birmingham." Kings Norton 261-262.

Tapes and Smallwares—

MacLennan, John, & Co., 30, Newgate Street, E.C.1. And at Glasgow. City 3115.

Timber—

Brown, R. F. & F. W., Wollaton, near Nottingham Nottingham 1526.

Hopton & Sons, George Street, Euston Square, London, N.W.1. "Hoptons, Eusquare, London." Museum 496. Also at Market Harborough, Leicestershire. "Hoptons, Market Harborough." Market Harborough 13.

Time Recorders—

Gledhill-Brook Time Recorders, Ltd., 26, Victoria Street, S.W.1. Victoria 1310.

Turnbuckles— Staffs.

Brown Bros., Ltd., Gt. Eastern St., E.C.1.

Rubery Owen & Co., Darlaston, South Mann, Egerton & Co., Ltd., 117, Cleveland Street, London, W "Installing, Euston road." Museum 70 (4 lines).

Tyres and Wheels—

The Palmer Tyre, Ltd., Shaftesbury Avenue. "Tyricord, Westcent." Gerrard 1214 (5 lines)

Undercarriages—

Thompson Bros. (Bilston), Ltd., Bradley, Bilston, England. "Thompson Bros Bilston." Bilston 10.

Varnishes—

The British Emaillite Co., Ltd., 30, Regent Street, S.W.1. "Ridleypren, Piccy, London" Gerrard 280.

Thomas Parsons & Sons, 315 and 317, Oxford Street, London, W.1. "Varjap, Phone, London." Mayfair 6347 (3 lines).

Robt. Ingham Clark and Co., Ltd., West Ham Abbey, E.15. "Oleotine, Strat, London." East 955.

Harland, W., & Son, Merton, London, S.W.19. "Harland, Wimbledon 45." Wimbledon 45 and 1395.

Naylor Bros., Ltd., Southall, Middlesex. "Naylor, Southall." Southall 30.

Vices—

Hampton, C. and J., Ltd., Sheffield. "Vices, Sheffield." Attercliffe 95.

Washers— Avenue. 1432.

Terry, Herbert & Sons, Ltd., Redditch. "Springs, Redditch." Redditch 61

Watchmakers and Jewellers—

(Silver Models)—

Goldsmiths' & Silversmiths' Co., Ltd., 112, Regent Street, W.1. Gerrard 909x (3 lines).

Welding and Cutting Plant—

Acetylene Corporation of Great Britain, Ltd., The, 49, Victoria Street, Westminster, S.W.1. "Flamma Vic, London." Vic 4830.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1. "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Welding Repairs—

Barimar, Ltd, 10, Poland Street, W.1. "Bariquamar. Reg, London." Gerrard 8173.

Imperial Light, Ltd., 123, Victoria Street, London, S.W.1 "Edibrac, 'Phone, London." 3540 Victoria (3 lines).

Wind Shields—

Auster, Ltd., 133, Long Acre, W.C. "Winflector, London." Regent 5910.

The Rotax Motor Accessories Co., Ltd., Victoria Road, Willesdon Junction, N.W.10. "Rotynalite, Phone, London." Willesden 2480.

Triplex Safety Glass Co., Ltd., 1, Albemarle Street, Piccadilly, W.1. "Shatterlys, Piccy, London" Regent 1340.

Wire Gauze—

Greening, N., & Sons, Ltd., 16, Finsbury Street, London, E.C.2. "Setscrew, Finsquare, London." London Wall 1082.

Wires and Cables—

Bruntons, Musselburgh, Scotland. "Wiremill, Musselburgh." Musselburgh 28.

Cradock, Geo., & Co., Ltd., Wakefield, England. "Cradock, Wakefield." Wakefield 466 (3 lines).

Wirework—

Terry, Herbert, & Sons Ltd., Redditch. "Springs, Redditch." Redditch 61.

Woodworking Machinery—

Robinson, Thomas, & Son, Ltd., Rochdale. "Robinson, Rochdale." Rochdale 467.

Sagar, J., & Co., Ltd., Halifax. "Sawtooth, Halifax." Halifax 136.

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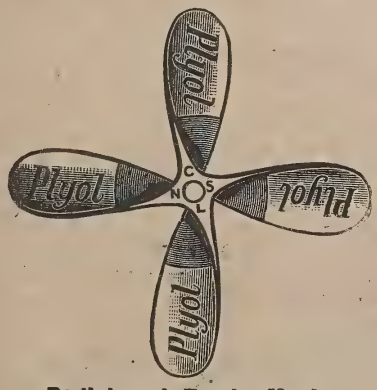
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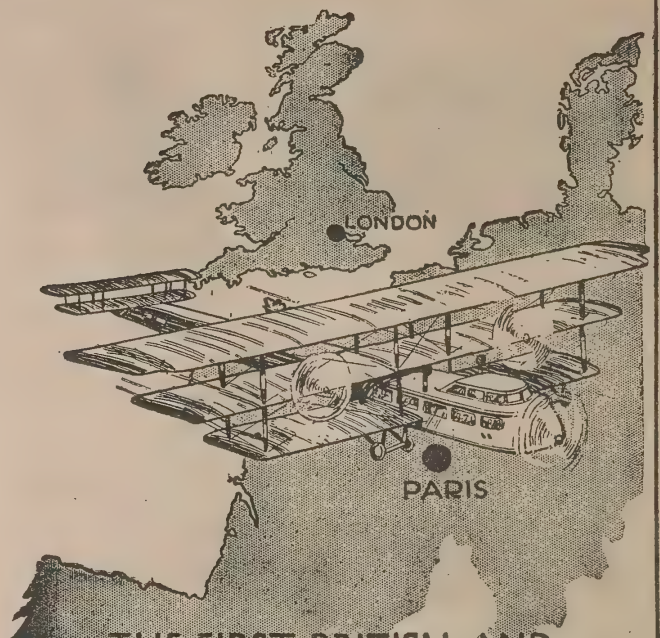
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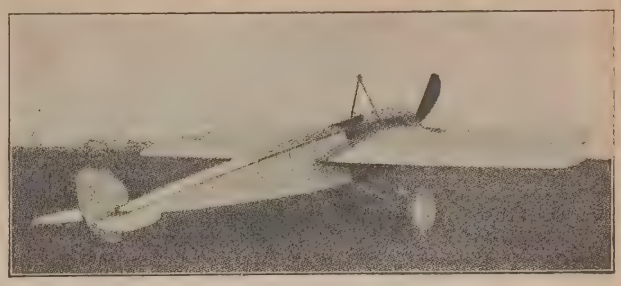
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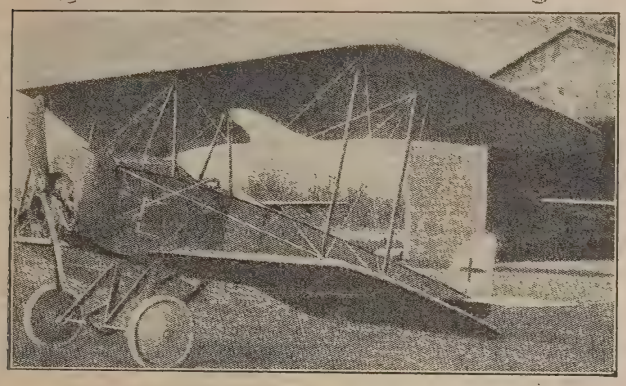
Three-quarter front view of the Thulin Monoplane.



Three-quarter rear view of the Thulin Monoplane.

When the war broke out there were two small Swedish aeroplane factories, one a department of the well-known Södertelge works under the management of the Swedish pioneer aviator, Baron Cederström, and holding rights and patterns from the Farman Brothers and the Gnome Engine Company, the other one being that of Dr. E. Thulin.

Sundry accidents with the Henry Farman biplanes led the Södertelge Works to adopt the Albatros model, and to equip the biplanes with original German engines, till the whole Södertelge establishment was taken over by the Government for other important work, when the aircraft department passed into the possession of Dr. Thulin.



Three-quarter front view of the Thulin Biplane.

His efforts have during the war developed into a concern of imposing Scandinavian dimensions, with a staff of 800 workmen, by the combination of three factors: Personal enterprise, a favourable time and the presence of raw materials in Sweden itself.

The Thulin Aircraft Works have furnished both the Swedish and foreign neutral Governments, including Denmark, these being supplied with Morane-Saulnier monoplanes and 80/90 h.p. Le Rhone type motors; and Holland getting Thulin scout monoplanes and 100/120 h.p. Thulin rotary engines.

The Thulin Aircraft Works run both a flying school with a number of Blériot and Morane monoplanes, where more than half of Sweden's aviators have taken their certificates, and an aerodynamical laboratory.

The chief, Dr. Thulin, looks behind on a successful career as an aviator. Among his notable flights were one from Paris to Landskrona in 1914; one from Malmö to Stockholm with photos of the Baltic Exhibition, just opened then, for a newspaper in the Swedish capital; and two days later a flight from Gothenburg to Copenhagen with Baron Blixen-Finnecke as passenger that the latter might participate in horse races in both cities, the second time this feat was done in history, the first being by a German sportsman.

AN AEROPLANE FOR THE AMATEUR.

People have been wondering to what uses the many aeroplanes now in hand—which were originally destined for the Royal Air Force—will be put. It is perfectly evident that no matter how large or how generous a financial appropriation may be made for the Royal Air Force in the future, it is beyond hope that its establishment will equal that of the present day. Also, the pause in hostilities which has been secured by the Armistice will make it possible for the Air Ministry to write off thousands of aeroplanes, which, under stress of war conditions, would have been pressed into service.

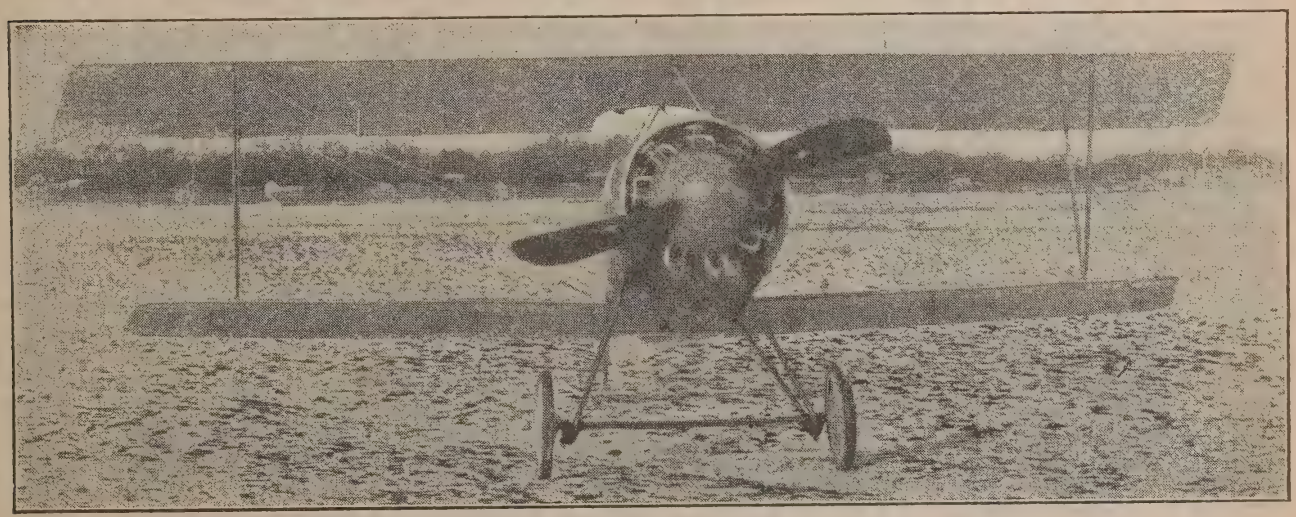
It may be taken as a matter of course that under peace conditions the Royal Air Force will be equipped with the very best aeroplanes that science and current knowledge have devised. At the time of the signing of the Armistice there existed aeroplanes of all types which were just ready for the production stage.

These, had war continued, might have reached the war areas any time within the next six months, and in the meantime the Royal Air Force would have had to content itself with the machines at present current on a production basis.

Accepting this as a probable position of affairs at the present moment, it seems fairly evident that large numbers of aeroplanes which have been delivered to the Air Force will be written off as obsolete, and that very possibly other machines now on order will never be delivered, some arrangement being made with the manufacturers in lieu thereof.

FROM MILITARY TO CIVIL USES.

Most of the aeroplanes which come within this category are well made, sound jobs, which, but for the fact that they have been superseded by aeroplanes showing better performances, would have been perfectly good war-time machines. As flying machines purely and simply, they are probably beyond criticism, and some



Front view of the Nielsen and Winther Nieuport type-Chaser Biplane.



The de Havilland School Machine, known as "The Clutching Hand" or the "Sky Hook."

of them, at any rate, would seem to lend themselves readily to private purposes.

A notable example is the De Havilland 6, or, as its manufacturers may now prefer to have it called, the "Airco" 6. Although originally produced as an instructional machine, this biplane subsequently found use in a special branch of offensive operations.

In view of its original purpose and the inevitably rough usage to which it was destined to be subjected, the "Airco" 6 was specially designed for ready repair and replacement. It was also intended to be as inexpensive as general utility and sound workmanship would permit.

Originally this machine was given a moderate degree of instability in order that pupils might not find it too easy to fly, but of late it has been altered so as to require the smallest possible degree of handling and make it as far as possible fly itself.

Performance.

Although it is only driven by a 90 h.p. R.A.F. engine, or, alternatively, a 90 h.p. Curtiss engine, it has a very fair surface for a two-seater machine, viz., 436 sq. ft., and, as at present arranged, it has a speed range of from 30 to about 70 miles per hour, the very slow minimum speed being obtained by the use of a wing of very deep camber. It is, therefore, eminently suitable for landing in small fields or on rough ground.

Such a machine would appear to be just what is required by the man who is out for pleasure flying and who wishes to make aerial touring a hobby.

The petrol capacity of the machine is 20 gallons, which represents the consumption for 3¾ hours, during which time a journey of 250 miles could be made in calm weather.

The storing of such a machine would not be a difficult matter, its dimensions, erected, being 35 ft. 11 in. span, by 26 ft. 3½ in. length, with a height of 10ft. 7 in. If the necessity for road transport arose, it would be easy to dismantle the wings, strap them alongside the fuselage, place the interplane struts in the cockpit, and tow the machine on its own wheels behind a car, the width of the track being 5 ft. 7¾ in.

A Practical Test.

As a matter of fact, one of these machines has been put to a very similar use to that suggested, during the past 18 months, its pilot using it for constant necessary journeys and housing it in a silk tent carried in the fuselage of the machine when other accommodation was not available.

At the present moment one cannot even hint at the price of such a machine or the cost of its maintenance, but it would be difficult to imagine one which would be cheaper to produce and cheaper to run.

Although this article is quite uninspired by the people most interested—namely, the Aircraft Manufacturing Co., Ltd., of Hendon—those who wish to weigh up the possibilities of owning and using a relatively inexpensive aeroplane could do worse than apply to the management of the firm.

It may be possible, in subsequent issues, to review the possibilities of other types of war aeroplanes, for which, at the moment, there is little military use.—W. L. W.

THE TRADE AND RECORD FLIGHTS.

One of the most interesting subjects of conversation in connection with the immediate future of the Aircraft Industry is the preparations which a number of firms are making to attempt the crossing of the Atlantic as soon after the abolition of flying restrictions as is possible.

The Atlantic Prize and Commercial Aeronautics.

It is generally known that a prize of considerable value has been outstanding for a long time for the achievement of this feat. This prize was offered by the "Daily Mail," and although the opportunity of acquiring £10,000 as a reward for flying the Atlantic is not to be despised, the people in the Aircraft Industry who are considering the question of Commercial Aeronautics from the broadest possible standpoint consider the winning or losing of such a prize as a matter of comparatively minor importance.

They are more closely concerned with the demonstration of the practical utility of the aeroplane as a means of covering long distances with speed and certainty, and they therefore regard the preparations for the initial crossings with deeper interest than can be associated with the winning of a newspaper prize in exchange for the successful accomplishment of what must undoubtedly be a hazardous feat.

Public Enthusiasm.

When for the first time the news is published of the crossing of the Atlantic there will undoubtedly arise a degree of public enthusiasm which will not be equalled by any subsequent success no matter how high its merits may be, and the man in the street will appraise the future prospects of trans-oceanic flying by the merits of the initial performance. By the man in the street one does not refer merely to the individual who loafs at the street corner, but to the whole of the non-technical community which can be looked upon as potential investors in or patrons of Commercial Aeronautics, and if the first aeroplane, or group of aeroplanes, cross from one side to the other—by the skin of its, or their, teeth, or after unpleasant adventures—a wave of scepticism is bound to spread out which will take a long time to subside. If, on the other hand, a properly built, and not specially faked, machine performs the journey without accident or incident, the event will endow the whole Aircraft Industry with a greater degree of general public approval than is realised by a great many people. The benefit will not merely go to the constructor of the fortunate aeroplane, but it will indirectly benefit his competitors both in his own country and abroad.

At the present time aircraft constructors, particularly in this

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country, are in a rather difficult position concerning their preparations for attempts on the Atlantic crossing. They are still in the hands of Government Departments, and they also do not know what restrictions, if any, will be placed upon the arrival or departure of aeroplanes in and from this country. At any rate, they are very certain that no attempt will be possible for a considerable time to come.

They would not mind the waiting period did they not experience a dim but very present fear that their intentions may be anticipated by people who can do very much as they please, and, if anything, that fear has been intensified by the news of General W. G. M. Salmond's meritorious progress from Cairo to Delhi, which, although it was an admittedly purely military achievement and a demonstration of first-class organisation, resulted in the removal of one of the ambitions of the serious-minded people in the Aircraft Industry—namely, to be first to run an aeroplane from England to India, for, be it remembered, General Salmond's machine was flown from England to Cairo—by stages, it is true.

The Possibility of a Government Entry.

So far as the Transatlantic flight is concerned, the prospective candidates for the honour of its successful achievement are chiefly afraid of anticipation by the seagoing section of the Royal Air Force.

Everyone knows there exist round our coasts big flying boats which, with a little alteration of their tank capacity, could easily be equipped for flying the Atlantic in two or three stages, and if the sea-going section of the Royal Air Force and its Naval friends became interested in the problem, it would be the easiest thing in the world, as soon as weather conditions improve, to place a string of aeroplane-mother ships, destroyers, "Q" boats, and other craft along the route to be followed.

Under these conditions flying the Atlantic would be a great deal safer and no more meritorious than flying the Channel on a foggy day in a land machine. The only essentials would be good organisation (in connection with the escorting ships), luck with the engines, and a reasonable amount of stamina on the part of the pilot or pilots. In fact, under these conditions it would be almost as easy for a whole flock of flying boats to make the crossing as for one. The expense of such an arrangement would be enormous. The successful accomplishment of the performance would be a splendid advertisement for the seagoing section of the Royal Air Force and an unqualified tragedy for the Aircraft Industry, because any subsequent attempts made by private enterprise which failed through lack of organisation of a degree only possible to wealthy Governments would have a most depressing effect on public confidence in the Aircraft Industry as compared with the Royal Air Force.

The Interests of the Aircraft Industry.

One is absolutely ready to admit that hair-brained attempts by unreliable firms and pilots must be discouraged both officially and unofficially, but if any plans have been made by people in high places in the Royal Air Force, one appeals to them not to poach, at any rate, on this particular preserve of the Aircraft Industry.

Every aeronautical triumph achieved by this country has been the direct result of private enterprise, and one trusts sincerely that the first flight across the Atlantic will be made by a machine which has reasonable prospects of making the crossing on its own account, rather than one which has to make a number of frantic hops encouraged by a cordon of nurses from one end of the journey to the other.

In the mind of the writer, the most lamentable clause in the regulations governing the award of the "Daily Mail" prize is that two stops during the journey are allowed. It would have been better had the conditions demanded an absolutely non-stop flight, as competitors would then have to concentrate on designing a true Transatlantic aeroplane, and could not content themselves with a machine whose only prospect of success is the experience of uncommon luck.—W. L. W.

HOW TO REDUCE RUNNING COSTS.

The pessimist of the class which is inclined to view the possibilities of Commercial Aeronautics with the scepticism concerning innovation more proper to the mid-Victorian age will frequently produce as an argument in support of his misgivings the well-known allegation that an aeroplane is such an expensive vehicle to run and to maintain that it cannot ever—or, at any rate, not for the present—be used for commercial moneygrubbing.

The aeroplane of the type most commonly used during the last year or so of hostilities—namely, the one- or two-seater biplane fitted with an over-sized, over-powered engine, which dragged its scientifically-lightened wings through a protesting atmosphere at an enormous rate of speed and climb, was certainly an extremely expensive machine to run and to maintain, especially when it was flown by a pilot who thought little of the morrow, and who was content if he could overtake or evade—according to circumstances—the Boche of the time being.

It is, however, useless to argue around a war aeroplane when discussing commercial aeronautics. One might as usefully delve for data concerning mercantile steam-ships in the vitals of a destroyer.

The war aeroplane of yesterday will not be the commercial aeroplane of to-morrow, although conceivably it may be used to bridge the gap until such time as properly conceived commercial machines can be produced.

For the moment, however, we can leave the properly designed commercial aeroplane in embryo, and to the tender mercies of the stress merchants and other people who are preparing for its birth.

Modern Aircraft and Costly Maintenance.

Let us consider the ordinary high-class two-seater or the twin-engined bomber and analyse the causes of their expensiveness.

Damage from enemy action can be ruled out of court when commercial possibilities are under consideration.

Crashes on starting and on landing are due mainly to three factors: Engine failure, pilots' carelessness, and low visibility. Assuming that there are no errors in design or construction, the chief source of engine failure is over-driving, and the average war aeroplane is so overpowered in order that it may climb rapidly that under commercial conditions it could climb and fly quite comfortably on something like half throttle, when the engine would run without overhaul as long as any first-class car engine.

The secondary result of engine failure is usually crashing, owing to the arrival of the machine on ground unsuitable for landing.

There are few other crashes, excepting those resulting from what naval apologists are pleased to call "low visibility," which are not due to the carelessness or conceit of the pilot. That is to say, they are generally due to sheer sloppy handling or to attempts on his part to show off, causes which in commercial practice would be inexcusable.

If a pilot can only be brought to a proper sense of responsibility, crashes consequent upon engine failure and carelessness can be reduced to an absolutely negligible degree.

Early Aviation and the Cautious Spirit.

Let us cast our minds back to the old days of aviation when the majority of pilots and aeroplane owners consisted of poor, or comparatively poor, men, when an aeroplane represented the patient work of months, or the carefully accumulated savings of years.

In those days aeroplanes were very bad, as were aero engines, both in design and construction. The pilots had little skill and much had to be left to the goodness of God.

Notwithstanding, crashes were comparatively few, and the precariously-built aeroplanes had a very fair lease of life.

Let us not forget the famous Hanriot monoplane "Henrietta," certain Bristol "box-kites," the Avro-Farman, Major (then Mr.) Loraine's Howard-Wright biplane, the 1912 Gordon-Bennett Blériot monoplane, to say nothing of Mr. Maurice Ducrog's 1910 Farman racer, which was still flying in the autumn of 1914 as a naval school machine, or the Koolhoven-Porte Deperdussin built in 1912 for the Military Trials and still flying in 1916.

This curious longevity of wood and wire was chiefly the result of care—loving care. What indeed would the pioneer aviators have said could they have had the use of, say, a Bristol Fighter or a Handley Page! Such machines would have been treasured. No new-born babe could have been handled with greater tenderness.

The Treatment of Pilots.

This, then, is the lesson: vest all responsibility for the safety and economical upkeep of commercial aeroplanes in their pilots. At the present moment there must be some thousands of Service pilots who are looking for civilian jobs and have sufficient technical knowledge to supervise the mechanical welfare of an aeroplane.

Pay them well, and, if you like, a bonus for every hour over a minimum that their machines are airworthy without overhaul; also, possibly a more substantial bonus if their machines enjoy an excess over the expected "life." But make the penalty of a crash dismissal if upon enquiry culpability can be proved in the remotest degree.

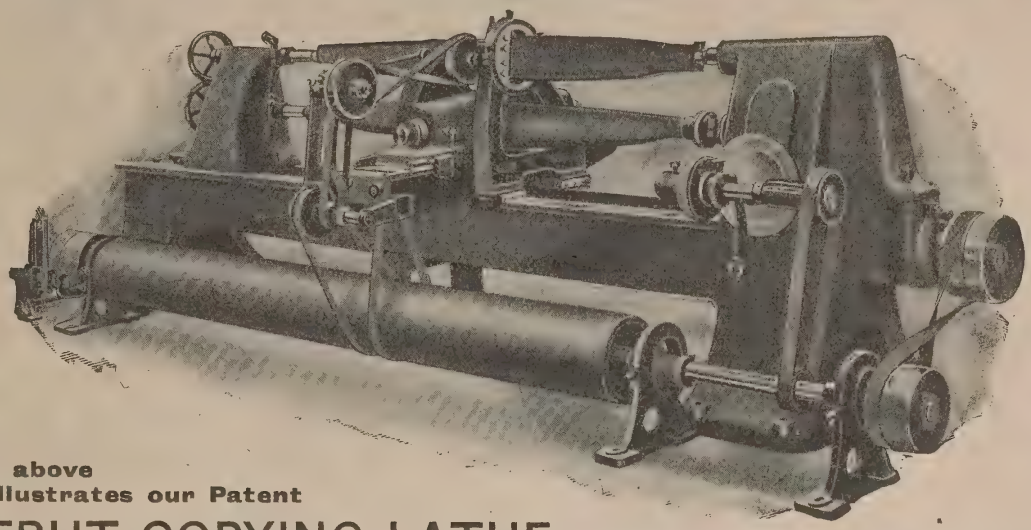
Pilots working under such conditions would nurse their aeroplanes and their engines as no Service pilot has ever done. They would never start off without being personally satisfied that everything was well, they would run their engines at the best cruising speed, and would land with precision on all occasions. Trick flying, steep diving, and "zooming" would become blessed memories of the sterner days of war, and the pilot who could show a "clean sheet" for a period of five years without the breakage of a single wire would earn more approval from the patrons of air travel than the most light-fingered, light-footed Boche chaser who ever stood amazed and dismayed at his three-year-old portrait in the leading weeklies.

That plain, unvarnished flying is "as safe as houses" when properly conducted is proved by history. During the years 1911-1914 many thousands of paying passengers were carried at the London Aerodrome at Hendon, and not a single case of death or serious personal injury occurred.

Of the difficulties which will have to be mastered concerning flying and low visibility—or, in other words, fog—one must write in a subsequent article.—W. L. W.

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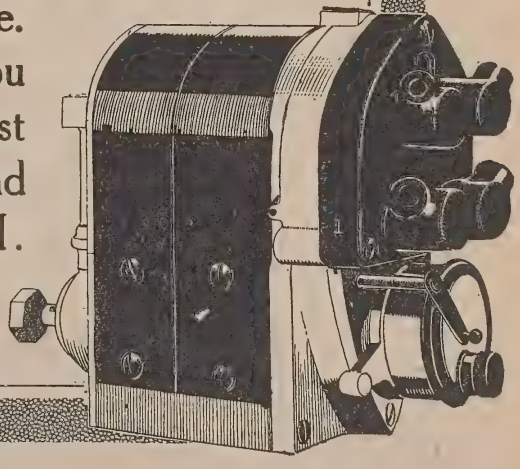
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THE AIRCRAFT TRADER

MARKET TOPICS.

PRICES ARE FOR QUANTITIES ON USUAL TERMS.

DEC. 24th.

COPPER.—The home position is very favourable and the outlook is bright; signs are not lacking that a very brisk trade will be done in manufactured Copper. It is understood that large orders have already been placed for plates, rods and tubes for locomotives, and now that exports can be made to British Possessions large inquiries are being received from the Colonies.

It was expected that the decline in freights and War Risk Insurance would result in a reduction in price, and on Friday last the price of standard was reduced £10, and B.S. £11, also the prices of all kinds of manufactured Copper have been reduced proportionately.

The position in U.S.A. is at present unsettled, due, apparently, to the approach of the date when the price comes up for reconsideration and the possibility of a reduction taking place. In some quarters it is claimed that the War Industries Board is bound to maintain the present price in order to enable producers to continue paying the present rate of wages. This statement should be received with caution, as the output is very high; and, as it is not expected that the demand will reach the present figure, there is good reason to expect a reduction in price.

Notification has been received of the formation in U.S.A. of a combine of American producers with the object of controlling all Copper exports; this will, undoubtedly, affect British buyers, as it will result in the export price being maintained at a high level.

COMPARATIVE PRICES.

Standard (To-day)	£112	10 0
,, Last Week	£122	10 0
,, Last Year	£110	0 0
,, 1916	£142	10 0

TIN.—The position here remains unaltered, and although some transactions have been recorded, the demand for post-war trade is not very brisk; buyers are probably waiting for the removal of the present restrictions, and there does not appear to be any reason why this should now be delayed.

The position in U.S.A. appears to be very complex. American authorities apparently made large purchases at the time when the prices were rising very rapidly in the East, and it was undoubtedly due to this panic-buying that the price soared, until over £400 was being paid. A price has now been fixed, and Tin must not be sold in America lower than the fixed prices. The price in New York and Chicago is 72½, which is about £340 per ton, and this price remains in force for two months.

The American Tin dealers know that the authorities overbought when the market was high, and in order that no loss should be incurred it has been necessary for them to fix a price at this high figure, and their complaints are very bitter indeed. There has been a further decline in prices here as indicated below.

COMPARATIVE PRICES.

Cash, to-day, 18th	£270 0 per ton.
,, last week	£275 10 per ton
,, last month	£327 0 per ton.
Lowest price, 1917	£180 15 per ton

LEAD.—There is a fair demand for manufactured Lead; at the same time buyers are not eager to place orders and are only buying hand to mouth. It is still considered that the price recently fixed by the Ministry is much too high—in fact, American Lead has been offered here at a price considerably below the official maximum price, but the Government are apparently not eager to encourage purchases, and seeing that freight and freight insurance charges are controlled by them, there is not much possibility of business being done.

STEEL.—Hardly any orders whatever are being placed for aircraft Steels, and there does not appear to be much possibility of there being any appreciable demand for some considerable time, the majority of firms having more than enough already on order and in stock to complete their reduced contracts.

The demand for ordinary peace trade is gradually increasing, and it is more than likely that after the holidays the tide of the coming boom for the Steel trade will rise very quickly. Many prophecies are being made as to the possible trend of prices when the subsidies have been withdrawn, and although the majority of people expect a slump in prices it is not at all certain that their expectations will be realised, judging from the statistics of the trend of prices after the Franco-German war. The same thing may not happen, but at the same time one has very little hope of a substantial reduction, if any.

No alteration in the prices of Aircraft Steels has yet been made, and, seeing that the Ministry of Munitions must hold large stocks, it will be interesting to know what steps it proposes taking in order to dispose of the material.

The restrictions on High Speed Steel have been considerably relaxed, and this can now be purchased through merchants. The maximum prices remain in force, also the regulations controlling the qualities and Tungsten contents.

TIMBER.—The Timber Controller is progressing very favourably with the relaxation of the restrictions which have caused so much aggravation amongst merchants. Up to the time of writing the following steps have been taken:—

1. Home-grown wood of all descriptions may now be purchased without a permit.

2. Imported Soft Woods may be sold without restrictions in larger quantities.

3. Cancellation of the Clause in the Timber Order of October, 1918, which relates to imported or native-grown Hard Woods and Plywoods, and under which it was necessary to obtain permits for the sale or purchase of same.

4. The Hard Wood stocks held by the Government are being released to the Timber Trade.

Although in some quarters it was expected that the whole of the restrictions which have tied merchants up in the past would be swept away by a stroke of the pen, this was hardly likely, and, as a matter of fact, would not have been a very wise procedure to have adopted.

A favourable impression is being created amongst Timber merchants by the steps which the Controller has already taken. There is no reason why the same freedom which was enjoyed in the pre-war days should not be reinstated during the next three or four months.

At the present time there are huge stocks of aeroplane Timbers arriving in the country. Very little demand is being made for them, and, to all appearances, the demand is likely to be very small during the next six months. Very large stocks of Hard Wood are held at present, and a fair number of orders will, undoubtedly, be placed when the restrictions have been removed. It is a little too early to prophesy what the prices are likely to be, but there is a general expectation that there will be much lower prices than ruled before the armistice.

Although, as stated above, the Government are issuing their stocks to traders, the prices at which they will be issued have not been announced, and this will undoubtedly affect the market price generally.

FABRIC.—The Government have not yet issued any official announcement as to the steps they intend taking to dispose of the huge stocks they at present hold and particulars are anxiously awaited both by constructors and the mills.

THE MONTHLY MARKET PRICE LIST.

DEC. 24th.

The prices given below are the prices ruling on the above date.

ALUMINIUM.*

Ingot	£225 per ton.*
Remelted	£210 per ton.*

BRASS.

Sheets	15⅝d. per lb.
Strip	15⅛d. per lb.
Wire	15d. per lb.
Tubes	16¾d. per lb.
Castings	16d. per lb.
Turning Rod	14d. per lb.
Brazed Tubes	18¾d. per lb.

COPPER.*

Ingot, Standard, Cash	£112 10s. per ton.*
Ingot, Standard, 3 mos.	£112 10s. per ton.*
Best Selected (Net)	£123 to £121 per ton.
Sheets	£150 per ton
Wire	16¼d. per lb.

Tubes, S.D. .....19¾d. per lb.
Tubes, Brazed .....19¾d. per lb.
Rivets .....1s. 11¼d. per lb., basis.

FABRIC.*

Linen, R.A.F., 17C, Spec., 36 in. wide, 3s. 1d. p. yd.
Linen, R.A.F., 17C, Spec., 38in. wide, 3s. 3d. p. yd.
Linen, R.A.F., 17C, Spec., 42 in. wide, 3s. 7d. p. yd.
Spaced, R.A.F., 17C, Spec., 37½ in. wide, 2s. 1d. p. yd.

GUN METAL. A.B. SPECIFICATION.

Castings .....2s. 3d. to 2s. 6d. per lb.

LEAD.*

Virgin Pig .....£40 per ton, c.i.f.
Virgin Pig .....£41 per ton, ex stores.
Sheets .....£51 per ton, D/d.
Pipes .....£51 10s. per ton
Dry White .....£61 per ton, less 5 per cent
White in Oil, Grnd. .....£72 10s. per ton.
(lots over 5 cwt. less 5 per cent.)
Red .....£56 per ton, less 2½ per cent.

NICKEL.

Nickel Cubes (Home) .....£195 per ton.

PHOSPHOR BRONZE.

Ingots, 5 cwt., and under .....No Price.
(Subject to Copper and Tin Fluctuations.)
Castings .....1s. 9d. to 2s. 2d. per lb.

PHOSPHOR COPPER.

Ton lots .....No Price.

SILVER.

Silver .....48 7-16d. per oz.

SOLDER.

Plumber's .....120s.
Tinman's .....158s.

STEEL.

High Speed, 14 p. cent., Tungsten, 3s. 8d. per lb., basis.
High Speed, 18 p. cent., Tungsten, 4s. 5d. per lb., basis.

ALLOY STEELS TO AIR MINISTRY SPECIFICATIONS.*‡

Round and Square :—

Specification No. S2 .....£86
Specification No. S2 (bright-drawn) £115
Specification No. S8 .....£86
Specification No. S10 .....£70
Specification No. S12 .....£75
Specification No. S14 .....£43
Specification No. S15 .....£70
Specification No. S16 .....£70
Specification No. S17 .....£75
Specification No. S18 (oil-hardened) £85
Specification No. K1 .....£75
Specification No. K2 .....£75
Specification No. K3 .....£86

The above prices are for ¼ in. to 5/16 in. only, other sizes are proportionate.

HEXAGONS.

	.455 and .525	.601 to .710.
Specification S2	£79	£77
Specification S8	£79	£77
Specification S2 (bright-drawn),	£112	£112
Specification S8 (bright-drawn),	£112	£112

SPELTER.

English f.o.b., Birmingham .....£57 to £57 10s.

TIN.

Tin £270

TINPLATES.

Tinplate .....32s. 6d., basis, f.c.t.

TIMBER.

	†Official.	Merchants.
Silver Spruce		10s. 4d., c.f.
*English Ash—		
Selected Logs	7s. 6d., c.f., f.o.r.	
Selected Lengths of Planks	10s. 6d., c.f., f.o.r	
Mahogany	2s. to 2s. 6d.	
Walnut	2s. to 2s. 6d.	

* For further details see Home Grown Timber Prices Order.

ZINC.

Zinc Sheets (American), £110 to £115, f.o.b., New York.

SCRAP MATERIALS (LONDON PRICES).

ALUMINIUM.

Description.	Price per ton on sale to refiner, delivered at refinery.
Sheet cuttings and rods containing a minimum of 96 per cent. Al.	£160 0 0
Old rolled, etc., containing a minimum of 96 per cent. Al.	120 0 0
Spinnings, punchings, and thin small scrap; also painted and varnished scrap that needs melting, containing a minimum of 96 per cent. Al.	105 0 0
Lump scrap from aero castings and material of equivalent value, containing 87 to 96 per cent. Al.	100 0 0
Turnings and Swarf, generally containing 87 to 95 per cent. Al.	87 10 0
Scrap, generally containing 80 to 86 per cent. Al.	80 0 0
Swarf and inferior Swarf, generally containing 80—85 per cent. Al.	70 0 0
All Scrap, containing below 80 per cent Al., not to exceed	65 0 0
All Swarf, containing below 80 per cent. Al.	50 0 0
Brass, Heavy Selected	75 0 0
Copper, Clean	105 0 0
Copper, Brazery	85 0 0
Gun-metal, Scrap	112 0 0
Lead, no Draft	34 10 0
Zinc, Old	35 0 0

* Official Prices. † Includes Parcel Inspection only. ‡ Prices include Delivery in the U.K.

RELAXATION OF PRIORITY CERTIFICATES.

An announcement has been made by the Ministry of Munitions to the effect that all uncompleted contracts for the Admiralty, War Office and Ministry of Munitions which were placed under clauses A and B, including the various grades of P1 to P6 under the Priority Order of March, 1917, should no longer be given the priority attached to this Order except in cases where any contractor is informed in writing or by official notice in the Press that a particular classification is still required to be given to any particular contract; contractors must notify the Order Departments of the Admiralty, War Office or Ministry of Munitions responsible for the contracts in question of any modification in the original date of completion resulting from this relaxation of the order as to priority.

The above announcement will enable firms to accept peace orders and give them priority over Government contracts. There is no indication as to the priority which they intend giving for reconstruction trade. In other words, is shipbuilding or housing and motor construction to take precedence over commercial aeroplane and seaplane construction? Some definite announcement should be made quickly.

TIMBER PERMITS.

The Board of Trade announce that as from Jan. 1st, 1919, no permits will be required for dealing in timber of any kind in the United Kingdom. As from the same date no permits will be required for buying, selling, or negotiating for the transport of hardwood timber, rattans or Malacca canes outside the United Kingdom for delivery to places abroad.

The Export of Timber (Ireland) Order, 1917, and the Packing Case and Lapping Board Order, 1918, are also revoked.

WELDING REPAIRS.

Now that wintry weather has arrived, the motorist will soon be experiencing the troubles incidental to frost-cracked cylinders. The restricted uses of motor vehicles make it more than ever necessary to maintain in condition the cars and lorries now on the road, and Barimar, Ltd., scientific welding engineers, of 10, Poland Street, London, have, therefore, made special arrangements to re-create frost-cracked parts without any unnecessary delay.

The example of a two-cylinder casting with burst water-jacket caused by frost, shows what can be done in this respect. As a portion of the water-jacket was missing, a new part had to be cast, and the whole was welded, under guarantee by Barimar scientific welding experts, within three days, and the cylinder is now permanently back in use, giving quite satisfactory service. The cost of the repair was very small compared with the value of the cylinders.

A GOOD EFFORT.

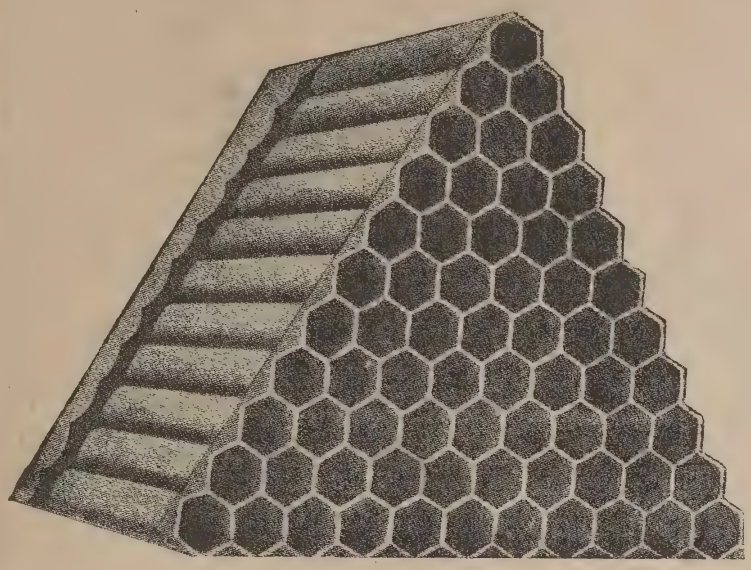
The Humber Recreation Society, which exists for the benefit of the employees of Humber, Ltd., Coventry, has contributed £1,056 during this year to such deserving charities as the Coventry and Worcestershire Hospital, the Coventry Mayor's Fund for Discharged Sailors and Soldiers, the Serbian Fund, etc.

This is certainly a good effort, which, it is hoped, will be continued in the future.

BRITISH MAGNETOS.

As a proof of the great strides the British manufacturers are making in the production of magnetos, it is noted with satisfaction that Messrs. C. A. Vandervell & Co.'s output for October alone was no less than 3,500. The C.A.V. magneto figured largely on the motor cycles of our despatch riders on all fronts during the war and met with their highest commendation.

How British Air Supremacy has been Won.



JOHN MARSTON, Ltd., of WOLVERHAMPTON, have for more than a Century been engaged in the manufacture of Sheet Metal Ware, and in every sense are All-British.

They were the original Makers in this country of the Honey-comb Radiator for Motor Cars, and just before the War they took a leading and successful part in freeing the British Motor Industry from attempted German Patent domination.

During the War, this Firm have been by far the largest and most reliable Makers of Aeroplane Radiators, and those who want good work are invited to communicate with them.

GLENDOWER AIRCRAFT CO., Ltd.

54, Sussex Place,
South Kensington,
S.W.7.

MANUFACTURERS OF AIRCRAFT.

CONTRACTORS TO H.M. AIR MINISTRY.

Telephone:
Kensington 7605 (3 Lines).

Telegrams:
"Glenacelle, Southkens, London.





This, Sir, is part of the "Ascol" Despatch Dept.

SO great is the volume of the "Ascol" business that a number of men, women and boys are busy throughout the day packing and despatching the orders which daily pour in. Every order received at "Ascol" House is so carefully indexed that any customer who desires to repeat any line or lines needs only to refer to his last order if in doubt of the exact description. This is very helpful to patrons who 'phone for immediate delivery.

The facility with which parts are taken from stock and packed is such that any order, however large, can be assembled and delivered into customer's own vans while the carmen wait.

The "Ascol" Direct Motor Service is available in the London area. Provincial orders are delivered same day as received by "Ascol" Motor Vans to a London Railway terminus, and from thence despatched by passenger train.

"Ascol News"—24 pages, published fortnightly—gives full list of parts and equipment in stock at "Ascol" House. Send to-day for latest issue.

MEM.—The new Commercial Requirements Dept. at "Ascol" House is now completely organized and in great favour. Send for full particulars.

THE
AIRCRAFT SUPPLIES
COMPANY LTD
"ASCOL" HOUSE, 125, LONG ACRE, LONDON, W.C.2.

G. H. MANSFIELD, Managing Director.

Telephone: 276 Gerrard (two lines).
Telegrams: "Upcast, Rand, London."

TRADE MARK ASCOL REGISTERED

INDEX TO STOCK LIST

Look carefully through this Index Page and you will be able to see at a glance exactly where to find the part you are requiring.

Description.	Aircraft No.	See Stock List page.
B—BOLTS (Hex A.G.S.) Various	—	13 & 14
BOLTS & NUTS (Metric)	—	15
BRUSHES (Dope) "Ascol"	—	23
,, (Various)	—	23
C—CABLE	—	17
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AIRCRAFT FINANCE

CURRENT TOPICS.

Post-War Financial Facilities.

Whatever may be the consolatory merits of sweet words and honeyed phrases their nutritive qualities are small; and in nine cases out of ten the reports of Governmental Committees read prettily enough, but there their value ceases. Some people will be disappointed in many ways with the report of the Committee on Financial Facilities after the war, because the recommendations put forward appear to be rather tame, though really sound enough, whereas something revolutionary in character had been frequently anticipated.

Committee Hits the Nail.

Briefly, the Committee point out that, although the provision of financial facilities is undoubtedly an important factor in the reconversion of trade and industry, it is not by any means the primary factor. The remedy for the wastage of capital during the war lies mainly in increased production and genuine saving. Who did not know that? What industry wants to know, however, is whether the credit facilities available during the transition and reconstruction period will be made a little more elastic by the banks. The Committee suggest that the banks "will have to depart in a measure from traditional custom when judging the character of a risk involved . . . and to exercise discretion upon broader lines." In order to do this the banks must increase their capital, which, by the way, they are doing.

German Financial System Mentioned.

One is very glad to see that the comparative advantages of the German banking system in relation to industrial development is not treated with scornful indifference. It is openly admitted that institutions are necessary to provide additional assistance for trade and industry by developing similar facilities to those which have been provided by the German banks. In this connection attention is drawn to the British Trade Corporation formed as a result of the deliberations of the Committee appointed by the Board of Trade. "The Corporation was designed to fill a gap in the financial machinery of this country and to supply needs which have long been felt by trade and industry. . . . Additional institutions of this character may be required in the future." As yet, however, it is admitted that the Corporation has not had adequate opportunity for demonstrating its usefulness.

State Assistance Undesirable.

While established concerns are to work harder and save more in order to bridge successfully the reconstruction period, being promised somewhat improved financial facilities, what will happen to the entirely new firms born of the war? It has been urged that it is not in the national interests that these firms should be allowed to peter out, and that every inducement should be given them to continue in business and undertake commercial manufacture, if necessary even to the extent of granting them State financial assistance. We feel that, even if State financial aid is desirable, there are many difficulties in granting such aid. Apart from the fact that it might be regarded as unjust were these firms enabled, by means of State aid to compete in established industries with firms previously employed in the same industry, it will be difficult if not impossible, to guard against wastefulness and inefficient management, and to ensure that the money was properly and economically employed.

Government Urged to Speak Out.

Few will question the economic soundness of the foregoing argument, yet in some exceptional cases it seems hard after so much mental and physical energy has been concentrated and utilised for the benefit, primarily, of the State, that the proved ability should be allowed to rot. As against this, however, the Committee hit out promisingly when they say that, "Uncertainty being the greatest deterrent to Industry and Finance alike, it is important that the Government should pronounce their future policy with regard to: (1) The future fiscal policy of the country; (2) the rationing of raw material and priority of essential industries and urgent requirements; (3) the break clause in connection with the termination of contracts for munitions of war; and (4) the disposal of State-owned factories and surplus stores.

The question of Excess Profits Duty, the burden of which has been referred to herein on previous occasions, is not ignored. It is stated that great assistance would be provided if manufacturers, etc., could retain a portion of the tax for a period in the form of a loan.

Darracq Capital Increased.

A. Darracq and Co. intend to follow the example of many other manufacturing concerns and increase the capital. At present the capitalisation is £650,000; it will be raised to £1,150,000 by the creation of 225,000 £1 preferred ordinary shares, and 275,000 £1 ordinary shares. It is proposed to issue 125,000 of the former at 21s. and all the ordinary shares at 30s., against a market price of 25s. for the existing preferred ordinary, and 40s. for the ordinary shares. Holders of existing shares will receive favourable consideration in allotment. This should prove quite a good bonus.

Higher Profits.

At £151,957 the year's profits compare with £125,015, and the ordinary dividend of 15 per cent. with a bonus of 5 per cent. is repeated, while £25,000 instead of £30,000 is added to the reserve, bringing it up to a total of £225,000. The financial position seems to be quite strong, and no doubt with the additional capital the company will develop considerably.

Financing an Idea.

With a capital of 30,000 lire the Vallecoccia Company has been formed for the purpose of pushing a self-sealing device applicable to petrol tanks which have been holed by bullets. The idea may be good enough, but with a capital of £1,200 the inventor or sponsor evidently are prepared for big things!

Aerial Transport Ventures.

The company-promoting fraternity are running riot. This is apparent from the multitude of high-faluting aerial transport ventures now being registered at Somerset House. It is a great pity; it is not a great surprise.

The ambitious and pretentious schemes adumbrated would provoke no adverse criticism were they sincere, or if they stood an ordinary chance of successful accomplishment. But they do not; they seem to be not merely immodest in conception—a fault which pays the company promoter out to pump all the guile from our believing public; but they are simply impossible in design, if not exactly fatuous.

How They Blossom.

The first indication of the blossoming of such financial buds usually reads like this:—The Timbuctoo and Spitzbergen Aerial Transport Co., Ltd., has been registered with a nominal capital of £100 in £1 shares for the purpose of establishing an aerial passenger, mail and goods service; to act as tourists' agents; to carry on the business of aeroplane and aircraft builders; to effect agreements with foreign Governments, etc., etc., and again etc. The subscribers (each with one share) are Mr. So-and-So., financier; Mr. Greasy, mechanical engineer; Topsy Fluffy, clerk.

Bold but Vicious.

After reading dozens of such notices one might reasonably pardon any unsophisticated individual for jumping to the conclusion that railroads have become a back number and shipping is almost so. It all sounds so bold and convincing; these bold schemes ought to bear fruit simply because they are so bold; they may, but the only fruit will be that garnered by the promoting clique.

Conceivably the Aircraft Industry might benefit temporarily, but the chances are that in reaping that small reward it will also accumulate a neutralising quantity of vice and a bad reputation which would only be eradicable by years of penance, trial and hard labour.

Self-Styled Pioneers.

A young industry like Aircraft, with a brilliant achievement to its credit, ought to be inoculated against this company-promoting parasite. That, of course, is impracticable. On paper some of the schemes may seem to be nice, although in actual fact they are really stupid. Financially they stand not the ghost of a chance of anything but a miserable failure, and most of the full-blooded optimists, whose genius is now being concentrated in the formation of these spurious schemes for encircling the earth with aerial transport, deserve to be treated with the greatest indifference. They think they are pioneers: they are mistaken.

An Overlooked Idea.

Admittedly there may be exceptions, but they seem to be few. When the Omniscient Bard asked, "What's in a name?" he had

little or no acquaintance with the company-promoting fraternity. It is the name the latter seeks: having secured the name he can develop the idea and elaborate schemes of conquest designed to enrich himself, and, ultimately, cause troubles to others. So far, it does not seem that any promoter has touched the undertaking industry yet. Aerial Undertaker, Ltd., leaves scope for improvement as a title, and for considerable embellishment as an idea.

Uncommercial Commercial Bases.

What one would very much like to know is the working basis, if any, on which the great majority of these ventures are planned. It may be simplicity itself to establish an aeroplane service between Timbuctoo and Spitzbergen—at least, the schedule may be practicable, but it is quite another to convert the idea into a payable proposition. The elaboration of the scheme would entail a lot of capital, and every halfpenny of that capital must show promise of becoming remunerative within a reasonable period. One wonders, indeed, whether in any of these projects any serious consideration has been paid to the question of working costs and administration costs, upkeep and depreciation, insurance, and the thousand-and-one other items that enter into the calculations of a sound business proposition.

Government Might Help.

Even a simple tourist business with relatively high fares would not give promise of financial success without the guarantee of a constantly heavy traffic movement, and who could obtain that guarantee? With a State-aided mail service it is another matter. The State would be expected to treat the pioneer venture not as a strictly business proposition, but as an experimental scheme for the furtherance of aviation. More pecuniary benefit would in these circumstances be derived from Government "spoon feeding" than from the essentially business side of the proposition. But desirable though a little judicious spoon feeding by the State may be, it has its drawbacks: indeed unless it is discreetly administered, it retards development instead of stimulating progress.

High Percentage Risk.

Most of these self-styled pioneering ventures in world-wide aerial transport seem to have that musical comedy touch of senseless unreality that they seem to damn themselves by their own pretentions. Before it is possible to run it is necessary to learn how to walk. Aircraft has confessedly demonstrated wonderful capabilities as a military instrument: when it demonstrates its capacity as a commercial machine, capital will rapidly flow in for its vigorous exploitation. Just at present it may be categorised on the basis of all these so-called pioneer ventures as a questionable 50 per cent. risk. Home railways are a 6 per cent. risk just now, and by degrees, with hard work, careful research and judicious development, aerial transport may progress towards that lower percentage.

New Capital Issues.

Although the Treasury is still in control of new capital issues, the fact that a large number of appeals are now being made to the public implies that the necessities of industrial development are no longer being refused official sanction. The Mond Nickel Co. has been inviting subscribers for 1,520,000 7 per cent. £1 non-cumulative preference shares at par. Then again, the Albion Motor Car Co. was offering £200,000 6 per cent. first mortgage debenture stock at the price of 97½ per cent. This stock is to be redeemed at 102½ per cent. by means of a sinking fund calculated to redeem the whole of the issue not later than Dec. 31st, 1933.

Base Metal Prospects Uncertain.

An instructive feature of the Stock Exchange just now is the wobble in base metal shares. This is due to the inability to pierce the outlook for copper, tin, spelter, etc. Already the removal of Government restrictions in the metal market has produced some violent fluctuations. During the transition period there is an idea that prices will gradually decline, but to what extent will be determined by a multitude of factors. And then in the subsequent reconstruction period the expected enlarged consumption may influence copper and tin, lead and zinc, much above the level ruling prior to the war.

Sunbeams.

At the fourteenth ordinary general meeting of the Sunbeam Motor Car Co., Ltd., Mr. Thomas Cureton presided, and said that on the last occasion of meeting together he expressed the hope that they would be able to present the next meeting with a complete balance-sheet of the financial year ended Aug. 31st last before the present year expired. But it would be seen that the notice received of the present fourteenth ordinary general meeting revealed the fact that this hope had been disappointed. That, however, was not due to any delays caused by the company or to disagreements between the company and the authorities, with whom their relations were never more cordial.

The reason was that the stocktaking proved a much more difficult task than they had assumed. Since the last meeting a change had come over the situation owing to obvious reasons, but when he mentioned the fact that their staff had been no more immune from the ravages of influenza than the rest of the community—they had an average of one in eight away for two months at least—the shareholders would understand the slight delay that had occurred in the fulfilment of their expectations. The directors were quite confident that very early in the new year they would be able to present the shareholders with a detailed balance-sheet. Therefore, the present meeting was a purely formal one.

Share Bonus Policy.

The Chairman, speaking at the extraordinary general meeting which followed, called for the purpose of considering, and, if thought fit, passing resolutions which had already been issued, said the resolutions were necessary to alter the articles of association to enable the directors to carry out their proposal of distributing a share-for-share bonus on the ordinary shares of the company. As they knew, the directors had never divided the full amount of profits realised. Instead, they had contented themselves with recommending an average dividend sufficiently handsome.

The volume to which the world's motor-manufacturing enterprise had attained was such that a company with approximately £250,000 capital was inadequately financed to embark on any such scale of business as their firm had achieved during the past 10 years, and must necessarily exploit if its future was to be one of maintained development. In industry there was no such thing as standing still. Either one must go forward or go backward. Their Board was resolved that the business of the company should go forward. That was a duty no less patriotic than had been the work they had undertaken with might and main in producing the best aircraft engine and staff cars possible.

Reserve.

The company's capital was at present inadequate, in view of the concern's growth. They hoped under peace conditions to be able to reduce the amount of stock, but the whole question required, and would receive, the careful attention of the board. At any rate, one thing was clear, viz., that the sum now proposed to be dealt with would be permanently required as capital in the business. Under those circumstances it seemed better to let the ordinary shareholders have it in the form of fully paid shares, and if their business continued to prosper they hoped to be able again to build up a reserve account by appropriations from time to time, so that that desirable item might not disappear from their balance-sheets.

He wished to point out that that was really a paper transaction. They might not be able to pay the same rate of dividend when the number of shares had been multiplied by two. He did not intend to make any prophecies as to future dividends, but he wished to point out that that transaction would not of itself bring in fresh money to the company's coffers. The speaker then moved the resolution.

NEW COMPANIES.

B. Wortman and Son, Ltd.—Private company. Registered Dec. 10th. Capital £10,000 in £1 shares (4,000 7½ per cent. cum. pref.). To take over the business of an aircraft manufacturer carried on by B. Wortman. Also to carry on the business of electrical engineers, etc. The subscribers (each with one share) are: B. Wortman, 42, Waterloo Street, Hammersmith, W.6, aircraft manufacturer; L. Jacobs, B.Sc., etc., 31, Hayes Court Mansions, S.E.5. First director:—B. Wortman. Registered office:—42, Waterloo Street, Hammersmith, W.6.

England and Turnbull, Ltd.—Private company. Registered Dec. 11th. Capital, £1,000 in £1 shares. Aircraft and component manufacturers and dealers, etc. The subscribers each with one share) are:—F. H. Aarons, The Firs, Kenley, Surrey, solicitor; W. Fuller, 19, Russell Road, N.8., solicitor. First directors: E. C. G. England and W. R. Turnbull. Solicitor, F. H. Aarons, The Firs, Kenley, Surrey.

SATISFACTIONS, MORTGAGES, AND CHARGES

Whitehead Aircraft (1917), Ltd.—Assignments of proceeds of Government contract, dated Nov. 20th, 1918, to secure all moneys due or to become from Co. to Barclay's Bank.

INSURANCE FOR AVIATORS.

A "Daily Chronicle" representative learns that there is every probability of the matter of insurance for aviators being shortly reconsidered by the Life Offices Association, which largely governs the policy of insurance organisations and some modification of the present conditions of life insurance is probable.

An official of the Gresham Company said he believed there was scarcely an office in existence that admitted aviators as insurers, except under a condition which provides that if death resulted from a flying accident within three years of acceptance of the risk the policy becomes void and premiums paid are not returnable.

The reason for the coming modification is that the insurance companies hold peace flying to be less dangerous than war flying.

WHEELS WITHIN WHEELS.

To the list of world's records accomplished by the Handley Page machines, fitted with Rolls-Royce engines, and lubricated with the Wakefield Castrol, must now be added the world's record flight of a pilot and 40 passengers to a height of 6,500 ft. Also the first flight from London to Delhi was performed on a Handley Page biplane using Castrol

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CONTRACTORS TO H.M. GOVERNMENT

B·G·L

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FOR FLYING BOATS AND AEROPLANES

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ETNA WORKS ROLFE STREET AND DARTMOUTH RD. FOUNDRY

SMETHWICK-BIRMINGHAM

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(1) "FLYING COLOURS."

6/- net. 6/3 post free.

By Captain R. H. M. Saundby, M.C.

With an Introduction by Major-General E. B. Ashmore, C.B., C.M.G., C.V.O.

An ideal gift book. So far as aviation books are concerned, "Flying Colours" will be unique. It consists of 20 pictures in colours, with brief descriptive text of the things Captain Saundby has seen on the Western front and at home; it illustrates not only the work of the R.F.C. during a whole year over the enemy lines, but the bringing down of a Zeppelin raider in flames, and the protection afforded by the seaplane to Hospital ships, etc. It will be a permanent memorial of the air work of the war; it is not the outcome of an artist's vivid imagination, but a reproduction of actualities. Major-General Ashmore in his introduction says "the series may be relied on as giving a very true and vivid idea of things as seen by a pilot in action." "Flying Colours" will be published in two forms:—

(a) An Edition de Luxe limited to 250 copies, every copy numbered; it will be printed on Art paper; each picture in colours, measuring 9 in. by 6½ in., will be attached to stout antique paper measuring 20 in. by 10 in. Price £1 17 6

(b) A Popular edition on art paper throughout 15 0

A copy of one of these editions should be ordered now.

7/6 net. 8/- post free.

(2) "FIVE YEARS IN THE R.F.C."

By Major J. B. McCudden, V.C., D.S.O., &c.

Only a few days before his death Major J. B. McCudden completed the writing of the story of his remarkable experiences in the R.F.C. The manuscript was handed to Mr. C. G. Grey to edit, and as Mr. Grey knew Major McCudden intimately he has been able to impart those touches to the work which the Author would himself have wished. The book is well illustrated with many portraits, pictures of machines, etc. It will be ready immediately.

6/- net. 6/3 post free.

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(Continued from page 2473.)

Sec. Lts. to be actg. Lts. (Gr. B.) :—(Hon. Lt.) G. E. Barnett, C. F. Ebbutt, J. J. Mackenzie; from (O.), Oct)4th.

Sec. Lt. H. G. Reddy (Sec. Lt., 1st Bn., Lon. R., T.F.), relinquishes his commn. on ceasing to be empld., Nov. 1st.

Capt. H. E. Earl (6th Bn., Rif. Brig., S.R.), relinquishes his commn. on acct. of ill-health, Dec. 21st.

Sec. Lt. (Hon. Lt.) A. Ellison relinquishes his commn. on acct. of ill-health, and is granted the hon. rank of Lt., Dec 21st.

MEDICAL BRANCH.—The following are granted temp. commns. as Capts., with effect from Nov. 28th, with seny. from April 1st :—F. N. V. Dyer (late temp. Surg., R.N.), J. Paxton (late temp. Surg., R.N.), J. Souter (late temp. Surg., R.N.).

CHAPLAIN'S BRANCH.—The Rev. P. C. C. Lamb (temp. Chap. to the Forces, 4th Cl., A.C.D.) is granted a permanent commn. as Chaplain with the relative rank of Capt., Dec. 17th.

The Rev. N. T. Hopkins (temp. Chap. to the Forces, 4th Cl., A.C.D.) is granted a temp. commn. as Chaplain with the relative rank of Capt., Dec. 19th.

MEMORANDA.—Maj.-Gen. W. S. Brancker, A.F.C., from R.A., is granted a permanent commn. as Maj.-Gen., Aug. 23rd.

Lt. (actg. Capt.) C. S. Willmott relinquishes his appt. as (S.O.) and actg. rank, Nov. 7th.

Lt. (actg. Capt.) J. W. Lound relinquishes the actg. rank of Capt. on ceasing to be specially empld., Dec. 5th.

Sec. Lt. F. H. S. David relinquishes his commn. on ceasing to be empld. Nov. 6th.

C. Dean (late Sec. Lt., R.A.F.) is granted the hon. rank of Sec. Lt., Dec. 14th.

The following Capts. are confirmed in the rank of Capt. :—B. E. Harrison, C. F. Brewerton, D.S.C., H. L. Everitt, A.F.C., A. T. Sketchley, E. S. Goodwin, A.F.C., E. E. Maitland-Heriot, D.S.C., J. W. B. Grigson, D.F.C., C. A. Rea, A.F.C., V. R. Gibbs, D.S.C., W. S. Wilson, Rhys Davies, C. Bounphrey, O. C. Le Boutillier, J. G. Ireland, A.F.C., G. W. Biles, E. M. Morgan, J. W. Hobbs, D. R. Pritchard, A. W. Farquhar, S. M. Kinkead, D.S.C., D.F.C.

AIR MINISTRY, Dec. 24th.

R.A.F.—The following temp. appt. is made :—Staff Officer, 4th Cl.—(1st Gr.) D. C. Hyde (temp. Capt., N. Staffs R.), and is granted a temp. commn. as Capt., Sept 21st.

FLYING BRANCH.—Lt. C. T. Black to be actg. Capt., whilst empld. as Capt., July 31st.

F. W. Freeman (temp. Sec. Lt., Essex R.) is granted a temp. commn. as Sec. Lt., Obsr. Officer, June 6th (substituted for the notification in "Gazette," Dec. 10th, in which he is described as a Flt. Cadet). 4092 Flt. Cadet M. Fraser is granted a temp. commn. as Sec. Lt. (A. and S.) (since deceased), July 19th.

W. T. Armstrong is antedated in his appt. as Sec. Lt. (A.), with effect from Sept. 14th.

H. J. G. Rudolf is antedated in his appt. as Sec. Lt. (A. and S.), with effect from May 16th.

The following are granted temp. commns. as Sec. Lts. (K.B.) :—R. C. E. Vernede (Sec. Lt., R.F.A., Spec. Res.), F. W. Dunnett, M.C. (Sec. Lt., R.F.A., Spec. Res.), E. F. Murphy (Sec. Lt., R.G.A., Spec. Res.), Nov. 10th; R. H. W. Davidson (Lt., R.F.A., T.F.), and to be Hon. Lt., E. H. Macmanus (Lt., R.F.A., T.F.), and to be Hon. Lt., Nov. 13th.

Capt. G. W. M. Grover (Lt., R. Marine Art.) relinquishes his commn. on ceasing to be empld., Nov. 24th.

Maj. J. K. Aird relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj., Dec. 25th.

The following Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lt. :—J. M. Dowsett (contracted on active service), J. W. Gillis (contracted on active service), D. W. Hughes (contracted on active service), F. C. Smith (caused by wounds), Dec. 25th.

Sec. Lt. E. W. Henry resigns his commn. to resume Medical Studies, and is granted the hon. rank of Sec. Lt., Dec. 25th.

The following Sec. Lts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lt. :—C. J. Allen, E. W. Chester (contracted on active service), A. H. Garland, Dec. 25th.

The following Lts. relinquish their commns. on account of ill-health :—A. C. Dunlop (Lt., R.E.) (contracted on active service), E. C. Gilroy, Dec. 25th.

Lt. C. G. Holbeche resigns his commn., Dec. 25th.

Lt. J. G. H. Jackson resigns his commn., having been found physically unsuited for the duties of Pilot or Obsr., Dec. 25th.

ADMINISTRATIVE BRANCH.—Capt. F. V. Cowell to be actg. Maj. while empld. as Maj., Oct. 30th.

Lts. to be actg. Capts. whilst empld. as Capts. :—H. G. Jones, April 1st (Substituted for notification in "Gazette," Dec. 13th.) (Hon. Capt.) A. Broomer, July 8th. P. J. Gething, M.C., Nov. 4th.

G. Prater (Capt. and Qrmr., Spec. List) is granted a temp. commn. as Lt., and to be Hon. Capt., Oct. 14th.

W. S. J. H. Coney (temp. Lt. D. of Corn. L.I.) is granted a temp. commn. as Lt., April 1st. (Substituted for notification in "Gazette," Nov. 8th.)

Lts. to be Lts. :—A. Bevan (from A.), Oct. 11th; D. W. Marriott (from A.), Nov. 2nd; W. M. M. Hurley (from A.), Nov. 5th; C. Wrigglesworth (from O.), Nov. 21st; I. V. Labrow (from A.), Dec. 5th.

Sec. Lts. to be Lts. :—Hon. Lt. (actg. Lt.) G. L. Bennet, (actg. Lt.) G. Barfoot-Saunt, F. G. Berkeley, (actg. Lt.) A. E. Biggs, (actg. Lt.) S. B. Browning, (actg. Capt.) G. T. Bridgewater (Hon. Lt.) (actg. Lt.) E. Butler, G. P. Colin, H. B. Dakin, (actg. Lt.) F. E. B. Duff, (Hon. Lt.) (actg. Lt.) E. H. Eldridge, C. C. Gardner, (Hon. Lt.) (actg. Capt.) J. W. Gardner, (actg. Lt.) H. D. Higham, (Hon. Lt.) (actg. Lt.) P. Maggs, (Hon. Lt.) (actg. Capt.) G. B. Redgrave, (Hon. Lt. (actg. Lt.) J. H. Thorpe, April 2nd; H. E. G. Findlay, April 3rd; W. D. Littlewood, April 8th; (actg. Capt.) J. R. Bingham, April 12th; (Hon. Lt.) F. Avison, April 26th; (actg. Lt.) J. H. Wright, April 30th; (Hon. Capt.) F. Grave, May 2nd; (actg. Capt.) H. W. Prockter, (actg. Lt.) D. H. Eteridge, May 5th; (Hon. Lt.) M. A. Robinson, May 11th; H. Coggins, May 30th; H. Bridgewater, June 2nd; (actg. Lt.) H. L. Dawson, (actg. Lt.) A. Miller, P. W. Renshaw, (actg. Lt.) J. C. F. Williams, June 8th; (actg. Lt.) K. M. Grahame, W. H. Hume, (actg. Lt.) R. E. Roberts, W. F. Swan, June 19th; (actg. Capt.) M. M. Merriman, July 1st; F. C. Smith, July 4th; F. H. Isitt, July 12th; (Hon. Lt.) A. J. Cassidy, July 26th; (actg. Lt.) B. S. Higgs, Aug. 9th; (actg. Lt.,) C. Guthrie, Aug 12th; A. J. Chambers, W. Luke, Aug. 27th; R. Bradford, M.C., A. L. Underwood, Sept. 1st; J. McK. Hooper, T. W. A. Jackson, Sept. 5th; (actg. Lt.) A. L. Freeman, Sept. 9th; (actg. Lt.) W. Brackenbury, Sept. 10th; A. MacNamara, Sept. 17th; L. W. H. Bertie, Sept. 19th; H. W. Denton, Sept. 22nd; C. B. Charlewood, Sept. 24th; A. Henderson, J. W. Mennie, Sept. 28th; (actg. Lt.) F. Freeman, L. B. Lyle, Oct. 5th; (actg. Lt.) P. A. Wright, Oct. 11th; W. J. C. Brown, (actg. Capt.) R. Tait, Oct. 13th; (actg. Lt.) H. E. Storey, Oct. 20th; R. W. P. Butler, A. D. Jack, Oct. 26th; H. F. D. Lane, Nov. 3rd; (actg. Lt.) H. F. W. Farquharson, T. A. E. Layborn, Nov. 4th; (actg. Lt.) R. C. Clements, Nov. 5th; (actg. Lt.) F. Peeny, Nov. 9th, (actg. Lt.) G. H. Wiggins, Nov. 11th; M. R. Williams, Nov. 23rd; R. Boyle, Nov. 26th; (actg. Capt.) G. M. Bell, Nov. 30th; (actg. Capt.) W. A. Carroll, Dec 1st; E. C. Haggart, Dec. 7th; A. G. Lewis, Dec. 15th; W. H. Savery, Dec. 20th; (actg. Lt.) L. Hawkins, Dec. 23rd; (actg. Lt.) H. Castle, A. Hancock, Dec. 27th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. :—(Hon. Lt.) J. A. Allen, May 15th; B. U. Wood, July 26th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. :—S. A. E. Cowell, Aug. 24th; J. L. Rogers, Sept. 27th.

Sec. Lt. E. B. Appleby to be Sec. Lt. from (A.), Nov. 30th.

The name of Arthur Bracy Langridge is as now described, and not as in "Gazette, Dec. 17th.

Maj. G. C. Riley (Maj., Royal Canadian Horse Artillery) relinquishes his commn. on ceasing to be empld., Dec. 27th.

The following Sec. Lts. relinquish their comms. on account of ill-health, and are granted the hon. rank of Sec. Lt. :—E. Apthomas, A. W. Long, G. A. Margetts, Dec. 25th.

TECHNICAL BRANCH.—Maj. S. J. L. Vincent (Spec. List) is granted a temp. commn. as Maj., Aug 10th

Capts to be actg. Majs. whilst empld. as Majs. :—A. Clayton, (Hon. Maj.) A. E. Hatton, R. K. Paton, A. D. S. Rice, Oct. 30th.

Lt. F. B. Adams to be actg. Maj. whilst empld. as Maj., Oct. 30th.

Sec. Lts., actg. Lts., to be actg. Majs. whilst empld. as Majs. :—O. C. Lees, A. J. Toomer, Oct. 30th.

Capt. A. B. Davies to be Capt., from (Ad.l.), Oct 1st.

Lts. to be actg. Capts. whilst empld. as Capts. :—B. S. Crimp, H. W. G. Drummond, R. P. Grant, S. T. Heath, H. V. Snook, (Hon. Capt.) G. R. G. Topham, Oct. 30th.

Sec. H. T. Woodhead to be actg. Capt. whilst empld. as Capt. (Gr. B), April 1st.

Sec. Lts. (actg. Lts.) to be actg. Capts. whilst empld. as Capts. :—C. A. Assiter, L. H. Bainton, L. A. Hooper, H. D. Staniar, Oct. 30th.

Sec. Lts. to be actg. Capts. whilst empld. as Capts. :—(Hon. Lt.) H. C. Bishop, W. G. Browne, E. W. Dawson, J. E. Koefod, C. H. Quelch, Oct. 30th.

Sec. Lts. to be actg. Capts. whilst empld. as Capts. (Gr. B) :—(Actg. Lt.) J. F. Alexander, H. L. Bown, H. V. Cherry, F. A. Cherry, A. C. Truelove, J. H. Tanton, A. H. Warriner, Oct 30th.

Sec. Lt. (Hon. Lt.) R. P. Graham to be temp. Lt. while empld., as Lt., July 16th (substituted for notification in "Gazette," Sept. 17th).

Lts. to be Lt., Gr. (A) :—G. S. Wood, from (A.), July 17th; G. W. Hulton, from (O.), C. J. Mahoney, from (O.), Oct. 18th.

Sec. Lts. to be actg. Lts. whilst empld. as Lts. :—J. Dale, E. J. Hindsley, S. Jupp, H. D. Oliver, H. E. Powell, B. E. D. Pratt, H. F. Wilkins, Oct. 30th.

Sec. Lts. to be Sec. Lts. (Gr. A) from Admin. :—H. R. Moffatt, W. A. Westley, July 1st; A. E. Simmonds, Aug. 11th; H. G. Wallis, Sept. 2nd; J. A. McDonald, Oct. 1st; W. Blairman, Oct. 28th; N. F. S. Hecht, Nov. 10th; H. G. Hawkes, Nov. 16th; A. J. Cook, P. J. Rixon, E. B. Cooke, A. R. N. Challacombe, J. Brereton, R. L. Powell, F. C. Gibson, J. A. Squire, Nov. 17th; J. J. Hegan, E. S. Olney, Nov. 18th; R. Wylie, Nov. 19th; D. L. Kane, Nov. 28th. D. H. Lumb, Dec. 2nd; K. A. Stoker, Dec. 10th.

Sec. Lt. (actg. Lt.) D. A. Tullis to be Sec. Lt., from S.O., and relinquishes his actg. rank of Lt., April 29th.

V. Sands (Sec. Lt., Middx. R., T.F.) is granted a temp. commn. as Sec. Lt., Sept. 30th, and with seny. from April 1st.

G. Pitt (temp. Lt., R.E.) is granted a temp. commn. as Lt., Nov. 5th, and with seny. from April 1st.

H. P. Rashleigh to be Sec. Lt., and to be Hon. Capt., Nov. 16th, and with seny from April 1st.

Sec. Lt. G. F. Henderson to be Sec. Lt., from (A.), Dec. 10th.

Sec. Lt. C. Reynolds to be Sec. Lt., from (A'ship), Nov. 7th.

Sec. Lt. R. L. T. Latour (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lt., Nov. 18th.

Sec. Lts. to be Sec. Lts., from (A.) :—A. H. Mitchell, July 9th; G. T. H. Pack, Oct. 1st.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. (Gr. "B") :—M. Bateson, Oct. 18th; C. F. Scholefield, H. G. McKechnie, Nov. 17th.

The following Sec. Lts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lts. :—E. C. Bolton, W. C. Farley, Nov. 17th; H. C. Dalglish, H. C. B. Good, C. H. Ashworth, A. West, Dec. 3rd.

Lt. N. Couve to be Sec. Lt., and to be Hon. Lt., from Obsr. Officer, Nov. 21st.

Sec. Lts. to be Sec. Lts. :—J. L. Tait, from Obsr. Officer, Nov. 16th; W. C. Francis, from (A.), Nov. 18th.

F. H. Jones to be Sec. Lt., from Sec. Lt. (actg. Lt.) Admin., at his own request, and to relinquish his actg. rank as Lt., Nov. 11th.

The following are granted temp. commns. as Sec. Lts., seny. April 1st :—A. M. Mulliner (temp. Lt., R.W. Surr. R.), and to be Hon. Lt., July 15th; S. L. Boothroyd (temp. Sec. Lt., Lab. Corps), Oct. 22nd; L. A. J. Barbe (Lt., High. L.I., T.F.), and to be Hon. Lt., Nov. 18th.

Sec. Lts. to be Sec. Lts., from (Admin.) :—C. W. Richardson, Sept. 10th; G. E. Litton, Oct. 8th; A. Potter, Oct. 30th. R. F. Tunmer, Nov. 18th; H. R. Stubbington, Nov. 25th; A. P. Dodd, Dec. 9th.

Lts. to be Sec. Lts., and to be Hon. Lt., from (Admin.) (Gr. "B") :—F. S. Thomas, Oct. 28th; J. J. Fremonger, Nov. 18th.

Lt. S. D. Carpenter to be Sec. Lt., and to be Hon. Lt. from (A.), Nov. 18th.

Sec. Lts. to be Sec. Lts., from (Admin.) :—H. G. C. Plumridge, Sept. 5th; J. M. Blake, F. Anderson, Sept. 10th; A. E. Firth, Oct. 5th; T. Mattocks, Oct. 16th; O. P. Aarvold, Nov. 1st; W. N. Doble, Nov. 2nd; H. S. M. Coster, Nov. 8th; P. F. Garnett, Nov. 10th; H. E. Fenton, Nov 13th; A. J. Green, A. J. Higgins, Nov. 16th; T. Wright, G. Dunn, N. W. Chandler, E. W. Husband, S. T. Phillips, J. Norman, W. A. A. Joyner, Nov. 17th; R. F. Wilson (date of 1st Commn., Oct. 13th); L. J. S. Sterlini, F. G. Thompson, A. R. Matthews, Nov. 18th; H. S. Gain, Nov. 19th; L. R. Merifield, Dec. 1st; S. J. Laidler, F. B. Jeffries, C. W. M. Sabine, T. W. Vanderpump, Dec. 3rd; J. Mutimer, Dec 9th; A. W. Spice, Dec. 11th; F. J. Nicholson, L. J. Ford, Nov. 17th; C. W. Cornell, J. Sewell, T. Bell, S. Warburton, A. J. Knight, J. H. Hankins, J. Witton, W. J. Wilkinson, C. R. Orchard, Nov. 18th; S. J. Collcutt, V. J. Atterton, W. Blakemore, A. H. Allen, Nov. 20th; G. Hobson, Nov. 21st; E. G. Pugh, G. S. Crowther, G. C. Harrison, Nov. 24th; F. W. Turner, J. Weeks, A. Sowdon, Nov. 25th.

The name of Maj. L. G. Harber is as now stated, and not as in "Gazette," Dec. 13th.

Sec. Lt. (actg. Lt.) V. A. Cooper relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lt., Dec. 25th.

Lt. T. J. Owen relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Lt., Dec. 25th.

MEMORANDA.—Capt. (actg. Lt.-Col.) M. Nicholson, M.B.E. (Lt., temp. Capt., R.F.A.) relinquishes his commn. on account of ill-health contracted on active service, Dec. 25th.

Capt. (actg. Maj.) E. S. Halford is granted the actg. rank of Lt.-Col. whilst specially empld., without pay and allces. of that rank, Dec. 13th.

Sec. Lt. D. W. Moscrop relinquishes his commn. on ceasing to be empld., Sept. 28th.

E. L. Day (late Sec. Lt., R.A.F.) is granted the hon. rank of Sec. Lt., Oct. 19th.

AIR MINISTRY, Dec. 27th.

R.A.F.—MEMORANDUM.—The notification which appeared in the "Gazette" of Dec. 6th, in so far as Lt.-Col. (actg. Brig.-Gen.) G. Livingston, C.M.G., is concerned, is cancelled.

WAR OFFICE, Dec. 31st.

REGULAR FORCES.—ESTABLISHMENTS.—R.F.C.—MIL. WING.—SCHOOLS OF INSTRN.—SCHOOLS OF MIL. AERONAUTICS.—Asst. Comdt.—(Graded for purposes of pay as a Brig.-Maj.).—Maj. W. B. Stansfeld, Res. of Officers, W. India R., Jan. 5th, 1918.

Sqdn. Comdr.—(Graded for purposes of pay as a Staff Capt.).—Lt. C. L. Mundey, M.C., R. Fus., to be secd., and to be temp. Capt. whilst so empld., March 27th, 1918.

WAR OFFICE, Dec 31st.

The following is an extract from Field Marshal Sir Douglas Haig's dispatch of Nov. 8th, 1918, submitting names deserving of special mention :—

AUSTRALIAN IMPERIAL FORCE.

FLYING CORPS.

Maj. D. V. J. Blake, 3rd Sqdn.
Lt. (temp. Capt.) A. H. Cobby, D.S.O., D.F.C., 4th Sqdn.
Capt. E. G. Knox, 3rd Sqdn.
Capt. E. J. McClaughry, D.S.O., D.F.C., 4th Sqdn.
Capt. R. Ross, 3rd Sqdn.

ROYAL AIR FORCE.

STAFF.

Capt. (actg. Maj.) E. H. C. Bald, M.C. (15th Hus., R. of O.).
Col. (actg. Brig.-Gen.) L. E. O. Charlton, C.M.G., D.S.O. (Lanc. Fus.)-
Capt. (actg. Lt.-Col.) T. M. Eggar (Lond. R.).
Col (actg. Maj.-Gen.) P. W. Game, D.S.O (R.A.), Lt.-Col. H. D. Goldsmith, D.S.O. (D.C.L.I.).
Col. (actg. Brig.-Gen.) R. E. T. Hogg, C.I.E., Ind. Army.
Lt. (actg Maj.) the Hon. M. H. R. Knatchbull-Hugessen, M.C. (R.A.), Capt (actg Maj.) C. B. Krabbé (Bedf. Yeo., T.F.).
Lt.-Col. (actg. Brig.-Gen.) E. R. Ludlow-Hewitt, D.S.O., M.C. (R. Ir. Rif.).
Col. (actg. Brig.-Gen.) D. L. Pitcher, C.M.G., Ind. Army.
Maj.-Gen. J. M. Salmond, C.M.G., C.V.O., D.S.O. (R. Lan. R.), Capt. J. Selwyn (R.A.), Hon. Maj. the Right Hon Sir J. A. Simon, K.C.V.O., K.C., P.C., Capt. (actg. Maj.) A. H. Stradling (Gord. Highrs.).
Col. (actg. Brig.-Gen.) T. I. Webb-Bowen, C.M.G. (Bedf. R.).

ROYAL AIR FORCE.

Maj. E. M. L. Ainslie, M.B.E. (Middx. R., T.F.), Lt. (actg. Capt.) S. I. Amor, Capt. J. P. Angell.
Lt. A. W. Barlow, Lt. R. H. Barratt (15th Sqdn.), Capt. (actg. Maj.) C. G. Beatson (Middx. R.) (Spec Res.), Maj. V. D. Bell (80th Sqdn.), Maj. B. S. Benning, Lt.-Col. A. V. Bettington, Lt. W. S. Birkett (31st Balloon Sec.), Lt. (actg. Capt.) A. C. Blackmore, Sec. Lt. (actg. Lt.) W. H. Botterill, Lt. (actg. Capt.) A. W. Brittain (H.Q., 22nd Wing), Lt. (actg. Capt.) E. G. Brookes, D.F.C., Lt. N. K. Brooks (R.F.A.) (Spec. Res.) (32nd Balloon Sec.), Lt. H. E. Browne, Maj. T. Bullen (Som. L.I.), Sec. Lt. (actg. Lt.) J. Bullock (Som. L.I.), Lt (actg. Capt.) H. J. Burden, D.S.O., D.F.C. (Can. Local Forces) (56th Sqdn.), Capt. W. L. Burt (Essex R., T.F.) (10th Wing), Maj. C. E. Bryant, D.S.O. (7th Hus.) (23rd Sqdn.).
Sec. Lt. (actg. Lt.) L. Cable, Lt.-Col. A. E. Cairnes, D.S.O. (7th Dgn. Gds.), H.Q. (22nd Wing), Capt. and Hon. Maj. A. D. Carter, D.S.O. (New Brunswick R., Can. Forces) (19th Sqdn.), Sec. Lt. J. Carter (11th Balloon Sec.), Lt.-Col. J. A. Chamier, D.S.O., O.B.E., Ind. Army, H.Q. (15th Wing), Sec. Lt. (actg. Lt.) H. Chapman, Sec. Lt. B. S. Charles (No. 1 Aeroplane Sup. Depot), Lt. H. N. Charles, Sec. Lt. (actg. Lt.) S. H. Child, Lt.-Col. H. B. T. Childs, Lt.-Col. (actg. Col.) A. Christie, D.S.O. (R.A.), Capt. (actg. Maj.) I. N. C. Clarke, D.F.C. (206th Sqdn.), Lt. W. G. Claxton, D.S.O., D.F.C. (41st Sqdn.), Capt. (actg. Maj.) R. Collishaw, D.S.O., D.S.C., D.F.C. (203rd Sqdn., 10th Army Wing), Lt (actg. Capt.) E. E. Colquhoun (Bedf. R., T.F.), Maj. J. P. C. Cooper, M.C., Capt. I. H. B. Cosway, Lt. (actg. Capt.) N. Crompton, Maj. (actg. Lt.-Col.) J. A. Cunningham, D.F.C. (R.A.).
Lt. (actg. Capt.) A. A. Denison, M.C. (Y. and L. R.), Sec. Lt. T. B. Dodwell, D.S.O. (211th Sqdn.), Maj. W. S. Douglas, M.C. (attd. 84th Sqdn.), Lt. E. O. Drinkwater (2nd Sqdn.), Capt. E. O. Drudge (203rd Sqdn.), Maj. C. S. Duffus, M.C., Lt. (actg. Capt.) G. H. Dykes (Lanc. Fus.) (8th Sqdn.).
Sec. Lt. C. E. Eddy (103rd Sqdn.), Lt.-Col. I. A. E. Edwards (R.A.), Capt. (actg. Maj.) A. S. Ellerton, Sec. Lt. S. G. Elliott-Smith (12th Sqdn.).
Maj. (actg. Lt.-Col.) G. F. H. Faithfull, Ind. Army (3rd Balloon Wing), Lt. L. L. Falck (Middx. R., T.F.) (36th Balloon Sec.), Lt.-Col. L. F. R. Fell, D.S.O., Lt. L. J. Forrest (102nd Sqdn.), Lt. C. F. Frank (19th Balloon Sec.), Capt. O. H. Frost, M.C. (Middx. R.), Capt. A. A. Fry (Mon. R., T.F.), H.Q. (12th Wing).
Sec. Lt. L. C. G. Gemson (No. 1 Aeroplane Sup. Depot), Lt. (actg. Capt.) J. G. Gillanders, D.F.C. (18th Sqdn.), Capt. J. Gilmour, D.S.O., M.C. (A. and S. Highrs.) (65th Sqdn.), Maj. S. J. Goble, D.S.O., D.S.C. (205th Sqdn.), Capt. (actg. Maj.) C. F. Gordon, M.C. (N. Staff. R.), Lt.-Col. E. L. Gossage, M.C. (R.A.), Temp. Capt. N. C. Graham, M.C. (R.A.M.C.) (22nd Wing), Capt. (actg. Maj.) J. R. Grant, Capt. R. H. Grant, Capt. A. L. Gregory, M.C. (Dorset R., Spec. Res.), Capt. H. W. Guy (11th Wing).
Capt (actg. Maj.) W. W. Hall, Maj. S. S. Halse, Sec. Lt. L. H. S. Harben (23rd Sqdn.), Maj. W. B. Hargrave (Suff. R., T.F.) (101st Sqdn.), Sec. Lt. E. C. Harris (K.R.R.C.) (102nd Sqdn.), Lt. (actg. Capt.) R. Harrison (52nd Sqdn.), Capt. W. W. Hart (5th Brig., attd. 15th Wing), Lt. (actg. Capt.) W. F. J. Harvey, D.F.C. (22nd Sqdn.), Capt. (actg. Maj.) E. W. Havers (10th Aircraft Park), Lt.-Col. S. A. Hebden, Maj. G. Henderson (C. India Horse) (53rd Sqdn.), Lt. F. H. Hiscock, Sec. Lt. (actg. Lt.) R. Hodge, Lt.-Col. (actg. Brig.-Gen.) F. V. Holt, D.S.O. (Oxf. and Bucks L.I.), Lt. J. A. Hoogterp (102nd Sqdn.), Lt. and Hon. Capt. A. H. C. Hope (Seaf. Highrs.) (1st Balloon Wing), Lt. (actg. Capt.) M. L. Horn (2nd Brig.), Lt. R. F. Howard, H.Q. (5th Balloon Wing), Lt. R. H. Humphries (Derby Yeo., T.F.), Capt. G. A. Hutchinson (42nd Sqdn.).
Capt. B. M. Iles.
Maj. E. H. Johnston (20th Sqdn.), Lt. C. Joiner (E. Surr. R.) (1st Balloon Wing), Maj. F. Jolly (4th Aircraft Park), Lt. (actg. Capt.) B. C. Jones, Lt. (actg. Capt.) J. I. T. Jones, D.S.O., M.C., D.F.C., M.M. (74th Sqdn.), Maj. W. D. L. Jupp.
Lt. L. D. Kirk (Seaf. Highrs.) (100th Sqdn.), Capt. D. H. Kemp, Maj. J. Kemper, M.B.E. (S. Lan. R.).
Maj. F. C. V. Laws (Linc. R.).
Lt. A. D. Macdonald, Lt.-Col. C. T. MacLean, M.C. (R. Sco. Fus.), Lt. G. D. Machin (Hamps. R.) (39th Balloon Sec.), Maj. T. L. Mallory (Lanc. Fus.) (secd. 8th Sqdn., attd. Tank Corps), Lt. (actg. Capt.) F. R. McCall, D.S.O., M.C., D.F.C. (Alberta R., Can. Forces) (41st Sqdn.), Lt. (actg. Capt.) F. S. McClurg (7th Sqdn.), Temp. Capt. W. J. McKeand (R.A.M.C.), Sec. Lt. and Hon. Capt. H. B. McKinnon (Can. Inf.), Capt. (actg. Maj.) C. T. McLaren (206th Sqdn.), Lt. J. W. Maddock (2nd Wing), Capt. (actg. Maj.) E. Mannock, D.S.O., M.C. (R.E.) (74th Sqdn.), Maj. C. G. Martyn (Mon. R., T.F.) (2nd Aircraft Park), Lt.-Col. H. M. Meyler, M.C. (Bord. R.) (2nd Balloon Wing), Sec. Lt. (actg. Lt.) J. McD. Moore, Maj. A. S. Morris, Lt. J. E. G. Mosby, D.S.O. (4th Sqdn.), Lt. and Hon. Capt. N. R. Mossop (47th Balloon Sec.), Lt. (actg. Capt.) E. F. Moulder, Lt. S. W. Mountain (16th Balloon Sec.), Maj. K. D. P. Murray, M.C. (10th Sqdn.).
Capt. C. G. Nevatt, Maj. H. J. Newton-Clare.
Lt. R. D. Owen (4th Sqdn.).
Maj. A. F. Palmer, Sec. Lt. and Hon. Lt. C. M. W. Park (2nd Res. Lorry Park), Lt. C. W. T. Paull (31st Balloon Sec.), Maj. S. J. Payne (5th Aircraft Park), Capt. (actg. Maj.) J. Pearce, Lt. and Hon. Capt. L. Pellderton (H.Q., 1st Brig.), Lt. (actg. Capt.) F. Petch (H.Q., 5th Brig.), Lt.-Col. P. H. L. Playfair, M.C. (R.F.A.) (H.Q., 13th Wing), Maj. (actg. Lt.-Col.) C. F. A. Portal, D.S.O., M.C. (R.E.) (16th Sqdn.), Lt. (actg. Capt. d'A. J. Prendergast (R.F.A.) (18th Balloon Coy.), Maj. E. R. Pretyman (Som. L.I.) (19th Sqdn.), Maj. S. W. Price, M.C., Capt. J. M. Pye-Smith (Surr. Yeo., T.F.) (23rd Sqdn.).
Lt. (actg. Capt.) F. G. Quigley, D.S.O., M.C. (70th Sqdn.).
Capt. J. V. Read, Maj. G. R. M. Reid, M.C. (A. and S. Highrs., Spec. Res.), Sec. Lt. W. Richards (Lond. R.) (100th Sqdn.), Capt. (actg. Maj.) V. A. H. Robeson, M.C. (24th Sqdn), Maj. J. T. Rodwell (9th Sqdn.), Lt. (actg. Capt.) A. J. M. Ross, Lt. L. C. Row, Lt.-Col. F. M. Roxby, O.B.E. (N. Staff. R., Spec. Res.) (5th Balloon Wing).
Lt. (actg. Capt.) J. H. Secker, Lt. A. W. Simon (102nd Sqdn.), Sec. Lt. A. H. Sippe (84th Sqdn.), Capt. A. G. Smith, M.C. (12th Lrs.), Lt. C. T. Smith (Northd. Fus.) (35th Balloon Sec.), Lt. H. Stansfield, Lt.-Col. J. Starling, Capt. (actg. Maj.) D. F. Stevenson, D.S.O., M.C. (Notts Yeo., T.F.) (4th Sqdn.), Sec. Lt. and Hon. Capt. H. W. Stockdale (101st Sqdn.), Sec. Lt. L. F. W. Stone, Lt. (actg. Capt.) A. W. Sutton, Dur. L.I., T.F., (2nd Brig.), Maj. B. E. Sutton, D.S.O., M.C. (Westmorland and Cumb. Yeo., T.F.) (7th Sqdn.)
Capt. O. V. Thomas (3rd Aircraft Park), Sec. Lt. W. V. Thomas, Lt. (temp. Capt.) G. E. Thomson, D.S.O., M.C. (Gen. List) (46th Sqdn.) (died), Capt. B. B. Tonis (R. War. R., Spec. Res.), Sec. Lt. (actg. Lt.) C. W. B. Tubbs.
Lt.-Col. H. A. Van Ryneveld, M.C. (11th Wing), Lt. (actg. Capt.) A. E. Verpilleux (H.Q., 12th Wing).
Sec. Lt. E. F. Warner (3rd Aircraft Park), Lt. J. G. Western (15th Wing), Capt. A. T. Wheatley, D.S.C. (203rd Sqdn.), Capt. A. H. Whistler, D.S.O., D.F.C. (Dorset R.) (80th Sqdn.), Capt. R. Whitaker (Kif. Brig.), Lt. E. C. Willis (6th Sqdn.), Lt.-Col. P. K. Wise, D.S.O. (R. War. R.), Maj. A. H. O'H. Wood (46th Sqdn.) (killed in action), Lt. C. C. Wood, Capt. H. W. Woollett, D.S.O., M.C. (Gen List) (43rd Sqdn.), Capt. R. M. Wynne-Eyton, M.C.
1674 1st Cl. Serjt. Mech. W. J. Allen (2nd Sqdn.), 15506 Cpl. Mech. F. J. Baxter (H.Q., 7th Brig.), 16860 Cpl. (actg. Serjt.) W. J. Beaumont (11th Balloon Sec.), 5892 1st Cl. Serjt. Mech. F. C. Blanchard (88th Sqdn.), 223320 Serjt. Cpl. Clk. G. E. Boucher, 15498 Serjt. Mech. L. Bradnick (20th Sqdn.), 45210 1st Air Mech. C. F. Butter (13th Sqdn.), 16320 Flt. Clk. T. Collins, 28965 1st Air Mech. W. J. Davies (12th Wing), 6555 Ch. Mech. R. Dearden (58th Sqdn.), 17620 Cpl. Mech (actg. Serjt.) W. Dewar, 385 Ch. Master Mech. M. Downer (60th Sqdn.), 11548 Ch. Master Mech. J. Drake (83rd Sqdn.), 17250 1st Cl. Clk. W. E. Edmonds (H.Q., 3rd Brig.), 7347 Actg. Master Mech. T. Fraser, 17814 Cpl. Mech. H. H. Freeman (3rd A.-A. Park), 14297 Serjt. Mech. G. H. Grove, 200782 Ch. Mech. H. J. Hamlin, 3892 Ch. Master Mech. H. I. Hooper, 403061 1st Air Mech. G. R. Hutchinson (6th Balloon Sec.), 21034 Cpl. Clk. C. H. Laue, 6651 Serjt. Clk. R. V. Lawes, 20854 1st Cl. Clk (actg. Cpl.) J. M. Leary, 68491 1st Cl. Clk. R. W. Lugsdin, 4633 Flt. Serjt. W. A. Medler (H.Q., 10th Army Wing), 16812 Cpl. Clk. H. Miller, 134913 1st Cl. Pte. (actg. Cpl.) J. Mitchell, 48007 1st Cl. Clk. (actg. Cpl. Clk.) T. Pearson, 17279 Cpl. Clk. (actg. Serjt. Clk.) A. H. Prince (H.Q., 1st Brig.), 16446 Serjt. Clk. A. J. B. Pusey (9th Brig.), 49897 Ch. Mech. W. Richards, 3707 Ch. Master Mech. F. Robins (58th Sqdn.), 69586 2nd Cl. Clk. A. T. Sanders (H.Q., 3rd Brig.), 78194 Cpl. Mech. J. Shepherd, 4236 Ch. Mech. T. H. Shiel (4th Sqdn.), 18906 Cpl. Mech. S. A. Smith (35th Balloon Sec.), 6550 Ch. Master Mech. A. Spark, 1816 1st Air Mech. G. E. Stevens, 1703 Ch. Master Mech. F. Tipler (6th Sqdn.), 27040 Ch. Mech. W. Towey (20th Balloon Sec.), 17811 Serjt. Mech. L. P. Tupling (16th Sqdn.), 26712 Ch. Mech. E. E. Wardell (2nd Balloon Sec.), 38605 Serjt. Mech. G. Whitehead, 7480 Cpl. Mech. H. Wilson (53rd Sqdn.).

AMERICAN EXPEDITIONARY FORCE.

AIR SERVICE.

First Lt. S. C. Welch (Sig. Res. Corps, attd. R.A.F.).

ADMIRALTY APPOINTMENTS

The following appointments have been made :—

DEC. 23rd.—WOMEN'S ROYAL NAVAL SERVICE.—Asst. Prin.—Miss M. H. [illegible] Carew R.A.F., Dec. 21st.

—Miss S. J. Tyler, apptd. Asst. Prin for Q.S. duties, Aug. 21st, and to Torquay R.A.F., Nov. 29th.

FROM THE COURT CIRCULAR.

BUCKINGHAM PALACE, Dec. 20th.

The following Officers were severally introduced into the presence of the King, when His Majesty invested them with the Insignia of the Distinguished Service Order :—

Lt.-Col. Pascoe Grenfell, R.A.F.; Sec. Lt. Brierley Dodwell, R.A.F.

The King then conferred decorations as follows :—

THE DISTINGUISHED SERVICE CROSS.—Maj. Thomas Hinshelwood, R.A.F.; Maj. William Welsh, R.A.F.; and Capt. John Chisholm, R.A.F.

THE MILITARY CROSS.—Maj. Leslie Peter, R.A.F.; Capt. Thomas Henderson, R.E., attd. R.A.F.; Capt. Douglas Holder, R.A.F.; Capt. David McGown, R.A.F.; Capt. John Middleton, R.A.F.; Capt. Ian Preston, R.A.F.; Capt. Lewis Shelley, R.A.F., Medical Service; Capt. Guy Tyrrell, The Buffs, attd. R.A.F.; Capt. Henry Valintine, R.A.F.; Lt. Ralph Rook, W. York Regt., attd. R.A.F.; Lt. Douglas Savage, R.A.F.

Field-Marshal the Duke of Connaught, Personal Aide-de-Camp to the King, attended by Lt.-Col. Sir Malcolm Murray, was present at Charing Cross Railway Station on behalf of His Majesty to receive Field-Marshal Sir Douglas Haig, Commander-in-Chief, British Armies in France, upon his arrival in London.

The King and Queen gave a Luncheon party in honour of Field-Marshal Sir Douglas Haig and the Commanders of the British Armies in France, at which the Prince Albert, the Princess Mary, the Prince George, Field-Marshal the Duke of Connaught, and the Marquis of Cambridge were present, and the following had the honour of being invited :—

Maj.-Gen. J. M. Salmond (Commander, R.A.F.)

BUCKINGHAM PALACE, Dec 21st.

The following officers were severally introduced into the presence of His Majesty, when the King invested them with the Insignia of the Distinguished Service Order :—

Lt.-Col. Peregrine Fellowes, R.A.F.; Lt.-Col. Eric Murray, Corps of Guides, attd. R.A.F.

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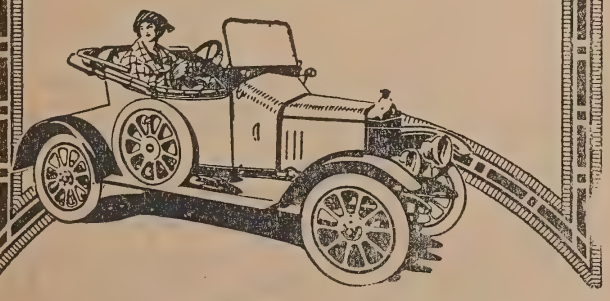
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His Majesty then conferred decorations as follows :—

The Distinguished Service Cross and Bar.—Capt. Arthur Whealy, R.A.F.

The Distinguished Service Cross.—Capt John Carr, R.A.F

The Military Cross and Bar.—Capt. Frederick Brown, R.A.F.; Capt. William Molsworth, R.A.F.

The Military Cross.—Maj. Roderic Hill, R.A.F.; Maj. John Howell, R.A.F.; Capt. Lewis Collins, R.A.F.; Capt. George Cox, R.A.F.; Capt. Montague Jennings, R.A.F.; Lt. John Baker, R.A.F.; Lt. Basil Bate, R.A.F.; Lt. Edwin Clear, R.A.F.; Lt. Harold Davies, Lond. R., attd. R.A.F.; Lt. Cecil Fenton, R.A.F.; Sec. Lt. Samuel Hill, R.A.F., attd. R.A.F.; Sec. Lt. James Ruxton, R. Fus., attd. R.A.F.; Sec. Lt. Philip Shaw, R.A.F.

Capt. the Prince Albert, R.A.F., attended by Maj. Louis Grieg, R.A.F., has left the Palace on his return to duty in France.

Buckingham Palace, Dec. 27th.

The King and Queen gave a banquet at Buckingham Palace this evening in honour of the President of the United States of America and Mrs. Wilson. The following received the Royal Command to attend :—

The Lord Weir of Eastwood (Secretary of State for the Royal Air Force).

Major-Gen. Frederick Sykes (Chief of the Air Staff, Royal Air Force).

THE CASUALTY LIST.

MILITARY.

Reported Dec. 21st.

The following Officers, who were prisoners of war in Germany, have been released, and have arrived in England :—

Logan, Sec. Lt. G. C., R.F.C.; Tomson, Lt. W. J. M., R.F.C.; Toone, Lt. J. W., R. Ir. R., attd. R.F.C.

The following Officer, who was a prisoner of war in Turkey has been released :—

Lazarus-Barlow, Capt. A. J., Yeo., attd. R.F.C.

Reported Dec. 27th.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England :—

Birley, Sec. Lt. T. E. H., R.F.C.; Clarke, Sec. Lt. C. H., R.F.C.; Hatfeild, Capt. A. C., R.F.C.; Kellogg, Lt. W. B., R.F.C.; Marsh, Sec. Lt. G. R. T., R.F.C.; Sparks, Sec. Lt. H. J., M.C., K.R.R.C. and R.F.C.; R.A.F.; Pitman, Lt. R. C., N.S.R., attd. R.A.F.

Canadian Forces.—Brisbin, Lt. H. V., Cent. Ont. R., attd. R.A.F.; Cyr, Lt. A. J., Can. For. Corps, attd. R.A.F.; Hall, Lt. C. R., Que. R., attd R.A.F.; Pitman, Lt. R. C., N.S.R., attd. R.A.F.

Reported Dec. 28th.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England :—

Baker, Sec. Lt. F. G., R.F.C.; Blake, Sec. Lt. H. P., R.F.C.; Boote, Sec. Lt. R. S. L., R.G.A., attd. R.F.C.; Braithwaite, Lt. B. F., R.F.C.; Cassels, Sec. Lt. H. K., R.F.C.; Castle, Lt. A. F., R.F.C.; Clutterbuck, Sec. Lt. L. C. F., R.F.C.; Coombs, Sec. Lt. V. C., R.F.C.; Coops, Lt. F. C., R.F.C.; Cutbill, Lt. E. H., R.F.C.; Davies, Lt. H. R., R.E., attd. R.F.C.; di Balme, Sec. Lt. Count L. T. B., R.F.C.; Dilnutt, Lt. E. J., R.F.C.; Fluke, Lt. W. G., D.S.O., S. Staff. R., attd. R.F.C.; Galer, Lt. H. E., R.F.A., attd. R.F.C.; Gordon, Lt. E. G. S., R.F.C.; Grout, Lt. E. J., R.F.C.; Hicks, Lt. G. E., R.F.C.; Holman, Lt. L., Hussars, attd. R.F.C.; Illingworth, Lt. F. W., Sco. Rif., attd. R.F.C.; Kemp, Lt. N. H., R.F.C.; Kidd, Sec. Lt. A. L., R.F.C.; Knight, Lt. N. L., R.F.C.; Lees, Capt. A., R. W. Kent R., attd. R.F.C.; Lewis, Sec. Lt. H. M., Welsh R., attd. R.F.C.; Lewis, Sec. Lt. M., R.F.C.; Lines, Sec. Lt. T. H., R.F.C.; Luxmoore, Capt. F. L., R.F.C.; McKissock, Sec. Lt. C. W., R.F.C.; Middleton, Lt. A. H., R. Muns. Fus., attd. R.F.C.; Petersen, Sec. Lt. G. G. W., R.F.C.; Powell, Maj. F. J., M.C., R.F.C.; Scarborough, Lt. F., R.F.C.; Sen, Sec. Lt. E. S. C., R.F.C.; Sibley, Capt. S. J., R.F.C.; Skinner, Lt. A. H., R.F.C.; Smith, Sec. Lt. R. B., R.F.C.; Stewart, Lt. J. D. M., R.F.C.; Tasker, Sec. Lt. W. T. B., R.F.C.; Taylor, Sec. Lt. A. L. T., R.F.C.; Thackrah, Sec. Lt. N. H., R.F.C.; Thompson, Lt. A., R.F.C.; Webster, Sec. Lt. T. M., R.F.C.; Wills, Lt. S. T., Northn. R., attd. R.F.C.; Wilmot, Capt. E. P., M.C., R.F.C.; Woolliams, Sec. Lt. F. H., R.F.C.

Canadian Forces.—Bourinot, Lt. A. S., Que. R., attd. R.A.F.; Boyce, Lt. H. B. P., Sask. R., attd. R.A.F.; Copeland, Capt. A. H. M., Can. A.S.C., attd. R.A.F.; Cotton, Lt. H., Que. R., attd. R.A.F.; Dean, Lt. A. C., Cent. Ont. R., attd. R.A.F.; Henry, Capt. F. R., Alta. R., attd. R.A.F.; Holley, Capt. T. G., Que. R., attd. R.A.F.; Hutcheson, Lt. W. B., Can. Eng., attd. R.A.F.; Kert, Lt. L., Can. Rly. Troops, attd. R.A.F.; Law, Capt. J. R., Can. A.S.C., attd. R.A.F.; Long, Lt. G. R., Man. R., attd. R.A.F.; MacKay, Lt. W. B., Cent. Ont. R., attd. R.A.F.; McRae, Lt. J. P., Can. A.S.C., attd. R.A.F.; Malloch, Lt. C., E. Ont. R., attd. R.A.F.; Weld, Lt. D. S., W. Ont. R., attd. R.A.F.; Wensley, Lt. J. H., Sask. R., attd. R.A.F.

Reported Dec. 30th.

The following officers, who were prisoners of war in Germany, have been released, and have arrived in England :—

Bell, Lt. E. V. A., Hamps. R., attd. R.F.C.; Berry, Sec. Lt. F. H., R. Sco. Fus., attd. R.F.C.; Birch, Lt. D. C., Northn. R., attd. R.F.C.; Caldecott, Sec. Lt. R., R.F.C.; Dodds, Lt. A., N. Staff. R., attd. R.F.C.; Ryall, Lt. A. G., Durh. L.I., attd. R.F.C.; Spencer, Sec. Lt. W. A. L., R.F.C.; Thompson, Sec. Lt. J. C., Shrops. L.I., attd. R.F.C.; Wilkins, Capt. H. O. D., Bedf. R., attd. R.F.C.; Wynee, Lt. A. F., Yorks. L.I., attd. R.F.C.

The following officers, who were prisoners of war in Germany, have been released :—

Chance, Lt. W. H. S., Worc. R., attd. R.F.C.; Faraday, Sec. Lt. M. S., R.F.A., attd. R.F.C.; Hunt, Sec. Lt. K. F., Yeo., attd. R.F.C.; Sanders, Lt. J. W., Middx. R., attd. R.F.C.; Whittle, Capt. O. L., S. Lan. R., attd. R.F.C.

Reported Dec. 31st.

The following officers, who were prisoners of war in Germany, have been released and have arrived in England :—

Adams, Lt. A. T., Wilts. R., attd. R.F.C.; Burbury, Lt. A., M.C., Yorks R., attd. R.F.C.; Carroll, Lt. C. E., R.G.A., attd. R.F.C.; Casey, Lt. P. J., R.F.C.; Falkenberg, Sec. Lt. G. D., R.F.C.; Leach, Lt. J. M., Yorks R., attd. R.F.C.; Pughe-Evans, Sec. Lt. H., Welsh R., attd. R.F.C.; Rodger, Lt. K. M., Arg. and Suth'd. Highrs., attd. R.F.C.; Ward, Lt. A. A., R.G.A., attd. R.F.C.

Casualties among Wt.Os., N.C.Os., and Men. The Dates are those of the Official List.

Dec. 20th.—The following soldier, who was a prisoner of war in Germany, has been released, and has arrived in England :—

R.F.C.—Piper 470 Serjt. N. V. (Fowey).

AIR FORCE.

Reported Dec. 21st

Died.—Brodie, Capt. P. W.
Charles, Lt. B. S.
Hinsley, Lt. W.
Solomon, Lt. H. M.

Cadets Killed.—Henderson, W. D.
Lloyd, A. E.
Peddie, J. W.
Radnor, A.
Rice, E. J.

Repatriated.—Brown, Lt. E. M.; Flintoft, Lt. H. T.; Usher-Somers, Lt. C. E.; Toone, Lt. J. W.

Reported Dec. 23rd.

Died.—Edridge-Green, Lt. H. A.
Dick, Lt. C. W.
Drake, Lt. E. F.
McNay, Sec. Lt. F. H.

Died of Injuries.—Sampson, Lt. W. J.

Previously reported Missing, now reported Killed.—Mill, Sec. Lt. J.

Repatriated.—Fricker, Lt. A. J.; Lynn, Lt. F.; MacLean, Sec. Lt. M.; Murray, Sec. Lt. R. B.; Stringer, Sec. Lt. J. S.

Reported Dec. 27th.

Killed.—Wheeler, Sec. Lt. G. R.
Wicks, Sec. Lt. W. D.

Died.—Lindsay, Lt. R. E.
Newbigging, Lt. J. P.
Walsh, Lt. L.

Died of Injuries.—Edwards, Capt. S. T.

Wounded.—Hughes, Lt. J. S.

Repatriated.—Evans, Maj. A. J., M.C.

Reported Dec. 28th.

Killed.—Owen, Lt. S. S.
Thompson, Sec. Lt. R. H.

Died.—Court, Sec. Lt. L. S.
Woollett, Capt. J. C.

Previously reported Missing, now reported Killed.—Morton, Sec. Lt. G. M. G.

Repatriated.—Aird, Capt. H. R.; Alcock, Capt. J. W., D.S.C.; Baillon, Sec. Lt. E. N.; Begg, Lt. M. G.; Bott, Capt. A. J.; Bronson, Capt. C. G.; Burns, Lt. H.; Bysshe, Lt. G. T.; Clark, Lt. C. G.; Clemson, Capt. A. W.; Cobbold, Lt. F. R. C.; Dacre, Capt. G. B.; Gore, Lt. F. D. C.; Greensmith, Capt. R. E.

Reported Dec. 29th.

Killed.—Arbuthnot, Lt. G. R.
Ritchie, Lt. G. T.

Died.—Hosking, Capt. F. J.
Manders, Capt. S. G.

Died of Injuries.—Rumsey, Capt. R. E.

Repatriated.—Hill, Lt. C. W.; Johnston, Sec. Lt. W. A.; Logan, Sec. Lt. G. C.; Lynn, Lt. F.; MacRae, Lt. J. D. G.; Mills, Lt. A. S.; Newton, Lt. E. A.; Paul, Capt. R. J.

Reported Dec. 31st

Killed.—Reynolds, Sec. Lt. E. F.

Died.—Royston, Lt. N.
Seed, Lt. W. E.
Stuart, Sec. Lt. T. C.
Towers, Capt. W. C. C.

Died of Wounds.—Sloss, Sec. Lt. J. D.

Repatriated.—Pettit, Capt. S. L.; Piper, Capt. T. H.; Reilly, Maj. H. L., D.S.O.; Spratt, Capt. N. C.; Taylor, Lt. W.; Tomson, Lt. W. J. M.; Trechmann, Capt. B. A.; Trulock, Lt. J. C.; Pakenham-Walsh, Lt. L. H.

Reported Jan. 1st. (Issued Dec. 31st, dated Jan. 1st, 1919.)

Killed.—Archibald, Sec. Lt. W. A.
Godfrey, Sec. Lt. C. H. A.
Booth, Sec. Lt. S. E.

Died.—Herlihy, Lt. P. J.
Sams, Lt. M. A.

Died of Injuries.—Barclay, Capt. F.

Cadets Killed.—Evans, D. R.
Fox, J. F.
Oberhuber, O. E.

Repatriated.—Buchanan, Lt. A.; Casgrain, Flt. Sub-Lt. H. R.; Grantham, Lt. V. M.; Hamilton, Lt. G.; Hancock, Lt. H. L. W.; Hodgson, Lt. A. G.; Williams, Lt. G. J.

Casualties Among Wt. Os., N.C.Os., and Men of the R.A.F.
The Dates are those of the Official List.

Died.

Dec. 20th.—Bull 147458 3rd Cl. Air Mech. P. H. (Fareham); Cobby 135934 2nd. Cl. Pte. W. H. (San Harnanda); Corbett 127897 2nd Cl. Pte. F. (Harrogate); Fagel 111528 2nd Cl. Clk. W. S. (Stockwell); Franklin 47691 1st Cl. Air Mech. H. (Levenshulme); Hardy 27330 1st Cl. Clk. W. (Merton); Lamb 57749 1st Cl. Pte. M. (Newcastle); McDonald 17307 Serjt.-Mech. A. (London, N.); Moore 226527 1st Cl. Air Mech. E. C. (Coulsdon); Priest 7314 1st Cl. Pte. (actg. Cpl.) R. (Mulbarton); Prime 8613 1st Cl. Air Mech. L. S. (Dartford); Ross 402660 1st Cl. Air Mech. R. P. (Coatbridge); Rowntree 124347 2nd Cl. Pte. J. (Coundon).

Died of Wounds.

Dec. 20th.—Ryland 29097 Cpl. A. C. (Birmingham).

Repatriated.

Dec. 20th.—Armstrong 223708 1st Cl. Air Mech. R. B. (Hasting, Barbados, British West Indies); Attwater 2202 Serjt.-Mech. S. (Preston); Bastick 44969 3rd Cl. Air Mech. F. H. (Paignton); Blakes 1128 Pte. G. (attd. from N.I.H.) (Ballymena); Boyd 203632 Ch. Mech. E. A. (Perth, W. Australia); Chilton 876 3rd Cl. Air Mech. J. (Watford); Culshaw P/13938 Serjt.-Mech. R. E. (Cl. B Cadet, attd. from A.C.C.) (Preston); Digby 4043 1st Cl. Air Mech. B. C. (Clapham); Harman 44805 Serjt. T. W. (Bramley, Leeds); Harvey 52315 1st Cl. Pte. E. D. (Havant, Hants); Hewitt 94294 1st Cl. Pte. W. (Clonaugh, Porterdown); Johnson 49227 3rd Cl. Air Mech. A. F. (Dublin); Marshall 9253 Cpl. E. (Kettering); Pollitt 88145 1st Cl. Pte. F. (Pendleton); Taylor 58038 1st Cl. Pte. T. H. (Gloucester); Topliffe 1746 Serjt.-Mech. G. (London); Wentworth 225673 1st Cl. Pte. D. (Derby); Wilson 151 Cpl.-Mech. A. (Willingore, near Lincoln).

Wounded.

Dec. 21st.—Douglas 91830 Serjt. A. W. (Normanton); Green 4837 1st Cl. Air Mech. G. H. (Hounslow Heath); Mills 263777 Air Mech. W. (South Tottenham); Penstone 65665 2nd Cl. Air Mech. H. V. (Harlesden, N.W.); Smith 7222 Cpl. H. S. (Maidstone).

Missing.

Dec. 21st.—Greenway 65771 1st Cl. Air Mech. J. (Whitefield, Lancs.); Twite 213270 1st Cl. Air Mech. W. J. L. (Edgware Road, London).

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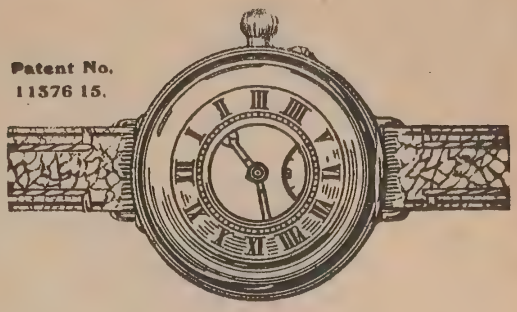
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PERSONAL NOTICES.

MILITARY.

Deaths.

FFRENCH.—Capt. Evelyn ffrench, R.A. and R.A.F., who was killed on Dec. 23rd whilst flying near Hounslow, was the only son of the late Archeson Evelyn ffrench, of Oakhurst, New South Wales, and of Mrs. ffrench, 30, Lexham Gardens, W.

LINDSAY-YOUNG.—Capt. Laurence Hingston Lindsay-Young, 1st R. Scots Fus., attd. R.A.F., eldest son of the Rev. Dr. and Mrs. H. Lindsay Young, of the Vicarage of St. John's, Portsea, graduated B.A. at Trinity College, Dublin, as Junior Moderator in History and Political Science in 1913, and obtained therefrom a university commission in the Army. He served in India, and since 1915 on the Western Front, and was wounded by shell at the Battle of Hooge. Subsequently he received wounds from which he died on Christmas Day. He was 27 years of age.

MARSH.—Capt. Philip Everard Graham Marsh, M.C., R.A.F., who, with his mechanic, was killed by a collision in the air while flying at the Feltwell aerodrome on Dec. 20th, was the only son of Major H. G. Marsh, 19th Hussars (retired), and Mrs. Marsh, of Danes Vale, Wethersfield, Essex. Capt. Marsh was educated at Lancing, and got his commission from Sandhurst in August, 1914. He served in France with the A.S.C., won the Military Cross, and was mentioned in dispatches. He was then for a short time with the Border Regt., and afterwards transferred to the R.A.F. He was instructor at the Feltwell aerodrome at the time of his death. Captain Marsh was only lately married.

READ.—Capt. Harry Esmond Read, Lincolnshire Yeomanry, attd. R.F.C., whose grave has now been discovered at Selvigny par Walancourt, France, was missing, reported killed, on Aug. 10th, 1917. He was the only son of Mr. and Mrs. Henry M. Read, late of 4, Lancaster Gate Terrace, W., and was educated at Marlborough and Corpus Christi College, Oxford, where he got his half-blue in 1913 for long-distance running. Immediately on the outbreak of war he joined up, and obtained a commission in the Lincolnshire Yeomanry in November, 1914. After serving in Egypt he transferred in 1916 into the Flying Corps, and was promoted to flight commander in France after six months' service there. He met his death as a result of a forced landing behind the enemy lines.

Engagements.

BRYANT—PLATT.—A marriage has been arranged, and will shortly take place, between Major Charles E. Bryant, D.S.O., 7th Hussars (late 12th Lancers) and R.A.F., and Gilian Mary, widow of Capt. L. S. Platt, 17th Lancers and R.F.C.

KNATCHBULL-HUGESSEN—BROWNE.—A marriage is arranged between Major the Hon. Michael Knatchbull-Hugessen, M.C., R.A. and R.A.F., only son of Lord and Lady Brabourne, and Lady Doreen Browne, youngest daughter of the Marquess and Marchioness of Sligo.

Marriages.

GARDNER—TAYLOR.—On Dec. 12th, at the Adelaide Road Presbyterian Church, Dublin, Major Dudley Gardner, M.C., R.A.F., only son of Mr. and Mrs. G. J. E. Gardner, Northallerton, was married to Gladys Marjorie, second daughter of Mr. and Mrs. J. A. Taylor, Ailsbury Road, Dublin.

WATSON—SORBY.—On Dec. 18th, at St. Mary Abbot's, Kensington, Capt. Graham Lauder Watson, West York Regt. and R.A.F., son of Mr. and Mrs. J. Falshaw Watson, late of Headingley, Leeds, was married to Dorothy, eldest daughter of the late William Sorby and Mrs. Sorby, of Lahore, by the Rev. W. H. Ferguson.

Birth.

FITZGERALD.—On Dec. 21st, at 13, Princess Gate, to Jean (née Cuthbert), wife of the late Lt. R. J. FitzGerald, M.C., 12th Gloucesters, attd. R.A.F.—a daughter (stillborn).

* * *

Any information as to Capt. E. Basil G. Morton, R.A.F. (pilot), and Lt. Frank A. Shaw, Lancs. Fus., attd. R.A.F. (observer), will be gratefully received by Capt. G. B. Strathy, Argyll House, W.1. Their machine, D.H. 1717, was last seen on July 16th descending in a spin over enemy territory within five miles of Dormans, south of the Marne.

AIR FORCE.

Deaths.

BELLORD.—Sec. Lt. Charles Edmund Bellord, R.A.F., who was reported missing after an air fight near Metz last September, is now known to have died of wounds in the First Military Hospital at Metz in September. He was the son of Mr. and Mrs. Edmund Bellord, of Bedford Lodge, Hampstead, and was educated at Downside School, near Bath. He went up to Oxford in 1917, and spent one year at Balliol. He volunteered for the Royal Flying Corps on attaining the age of 18, and after six months' training he was sent to France last August. He was killed three weeks later.

DAVIES.—Flt. Cadet Herbert John St. Aubrey Davies, R.A.F., who was accidentally killed on Dec. 17th, was the elder son of Herbert Reginald St. Aubrey and Mabel Elizabeth Davies.

FOX and BEAMER.—A collision in the air between two aeroplanes caused the deaths, at Market Drayton, Salop, of Flt. Cadet John Fox, R.A.F., who was on his first flight alone, and Capt. Edgar Beamer, R.A.F. In the latter's machine was Capt. Harrison, R.A.F., who was seriously injured, and is in a critical condition.

HAWKE.—During his leave from France, Sec. Lt. Hawke, R.A.F., son of Dr. Hawke, of Shortlands, Kent, died from injuries he received in a collision between his motor-cycle and a motor-car at Blackheath on Dec. 26th. He was 21 years of age.

SIMPSON.—Lt. Thomas B. Simpson, R.A.F., of London, Ontario, was killed recently while flying at Fairlop Aerodrome, Essex. He was seen to dive towards a wood, and later his dead body was found under the smashed machine at Havering.

YOUNG.—Lt. Christopher Young, R.A.F., 55th Sqdn., who was previously reported missing, is now known to have been killed over Oberndorf on July 20th. He was the husband of Phyllis (née Lake), and elder son of the late E. C. Young and Mrs. Young, Southampton. He was 27 years of age.

Engagements.

EVANS—JONES.—The engagement is announced between Lt. Einion Evans, R.A.F., younger son of Mr. E. W. Evans, J.P., and Mrs. Evans, of Dolgelley, and Dilys, only daughter of Mr. and Mrs. J. E. Jones, of Cardiff.

STRINGER—GRANT.—A marriage has been arranged, and will shortly take place, between Capt. L. B. Stringer, R.A.F. Medical service, second son of Mr. Justice Stringer, Supreme Court, New Zealand, and Mrs. T. W. Stringer, and Maud, third daughter of Mr. and Mrs. John Grant, of Boston, Lincolnshire.

Marriages.

HEARD—COCK.—On Dec. 17th, at Northam Parish Church, N. Devon, Lt. W. H. Heard, R.A.F. (Technical Branch), of Normanhurst, Bideford, was married by licence to Florence Maud Cock, only daughter of Mr. and Mrs. Frank Cock, of Norman Villa, Northam, by the Rev. Geo. Scholey, C.E., vicar of Appledore.

HOLLINGSWORTH—PIERCE.—On Dec. 26th, at Holy Trinity Church, Roehampton, Lt. Milton Hollingsworth, R.A.F., of Virginia, U.S.A., was married to Sylvia Pierce, eldest daughter of Mr. and Mrs. A. E. Pierce, Contractor, Dungarvan Avenue, Putney, by the Rev. Canon Brown.

KING—PARTINGTON.—On Dec. 26th, at St. Margaret's, Streatham Hill, Godfrey George King, Kite Balloon Section, R.A.F., eldest son of George King, of Edenderry, King's County, was married to Mary Constance, third daughter of Charles F. Partington, J.P., of 70, Christchurch Road, Tulse Hill, S.W., by the Rev. John Whitaker and the Rev. A. P. Cutch, Vicar of the parish.

MERRINGTON—OWEN.—On Dec. 18th, at St. Thomas of Canterbury, St. Leonards, Sec. Lt. John Leonard Merrington, R.A.F., son of the late T. J. A. Merrington and Mrs. Merrington, of Cape Town, was married to Beatrice Violet, younger daughter of the late William Owen, I.S.O., and Mrs. Owen, of St. Leonards, and granddaughter of the late Sir Hugh Owen, L.G.B., by the Rev. J. Phillips, of Sevenoaks.

VERNON—MEADE.—On Dec. 21st, in London, Major W. F. Vernon, R.A.F., was married to L. G. A. Meade, Deputy Principal, W.R.N.S.

TOWNSHEND—McINTOSH.—On Dec. 21st, 1918, at the Church of St. Dunstan, Cream, Lt. Raymond Edgar Townshend, R.A.F., eldest son of the late Edgar Townshend and Mrs. Townshend, of "Avoca," Sutton, Surrey, was married to Isabella Walker McIntosh, A.T.S., W.R.A.F., eldest daughter of Charles Graham McIntosh, of Edinburgh.

WILSDON—COLLINS.—On Dec. 12th, at St. Denys', Stanford-in-the-Vale, Berks, Capt. Harry A. Wilsdon, R.A.F., Oxford, was married to Mabel E. Collins, only daughter of Mr. and Mrs. H. Collins, Stanford-in-the-Vale, Berks.

Births.

COOKSON.—On Dec. 19th, at The Top House, Trevarth, Mevagissey, Cornwall, the wife of Capt. Roger G. Cookson, R.A.F., of a daughter.

SHIRTCLIFFE.—On Dec. 17th, at 24, Bell Vue Road, Salisbury, the wife of Capt. W. S. Shirtcliffe, R.A.F., of a daughter.

THOMAS.—On Dec. 16th, at 37, Westbourne Gardens, the wife of Lt. R. Q. Thomas, R.A.F., of a daughter.

THOMAS.—On Dec. 16th, at Beaumaris, Westgate-on-Sea, the wife of the Rev. H. A. Thomas, R.A.F., of a daughter (stillborn) and a son (living).

TOD.—On Dec. 19th, at Westgate, the wife of Capt. W. Tod, R.A.F.—a daughter.

* * *

Any information as to the fate of Lt. V. St. B. Collins, R.A.F., through returned prisoners of war would be gratefully received by Lady Buckingham, Artillery Mansions Hotel, Westminster, S.W.1.

Lt. R. H. Frank, of the 73rd Sqdn., R.A.F., has been missing since Aug. 4th. If any returned prisoner from Germany can give any information respecting him, F. D. Frank will be most grateful.—Address, 93, Cheyne Walk, Chelsea.

Sec. Lt. J. A. Lewis, of the 210th Sqdn., R.A.F., was reported missing on Sept. 16th after an offensive patrol over Zeebrugge. Any information will be gratefully received by his parents.—A. R. Lewis, Penoryn, Overhill Road, Downend, Bristol.

* * *

Lt. Adams, R.A.F., and Serjt.-Obsr. G. Bissell, R.A.F., have both been missing since Sept. 29th. News of either is earnestly desired by Herbert Bissell, Round Oak, Brierley Hill.

* * *

Information is required concerning Lt. N. G. Stransom, 48th Squadron R.A.F., and his Obsr. Pte. C. V. Taylor, who were flying Bristol Fighter No. B.1299, and were brought down over the German lines in fight between five Bristol Fighters and eight enemy triplanes on May 10th, 1918, and have been reported missing since that date. The information will be gratefully received by Mr. J. W. Stransom, Sackville, St. Stephen's Road, Hounslow.

* * *

Lt. Paul Sherek, R.A.F., 57th Squadron, reported missing since Oct. 1st, 1918. Any information would be gratefully received by his father, B. Sherek, 17, Lisle Street, W.C.2.

THE CAMPAIGN IN PALESTINE.

The Secretary of State for War has received a dispatch dated Oct. 31st, 1918 (published in the "London Gazette," Dec. 30th, 1918), from General Sir Edmund Allenby, G.C.B., G.C.M.G., Commanding-in-Chief, Egyptian Expeditionary Force, covering the operations in Palestine from Sept. 19th until the end of Octobed. The following extracts made from the dispatch are those dealing with the work done by the Royal Air Force:—

"At the beginning of September I estimated the strength of the IVth, VIIth, and VIIIth Turkish Armies to be 23,000 rifles, 3,000 sabres, and 340 guns. The IVth Army, 6,000 rifles, 2,000 sabres, and 74 guns, faced my Forces in the Jordan Valley. The VIIth Army held a front of some 20 miles astride the Jerusalem-Nablus road with 7,000 rifles and 111 guns, while the VIIIth Army front extended from Furkah to the sea, and was held by 10,000 rifles and 157 guns.

"In addition, the garrison of Maan and the posts on the Hejaz railway north of it consisted of some 6,000 rifles and 30 guns.

"The enemy's general reserve, only 3,000 rifles in strength, with 30 guns, was distributed between Tiberias, Nazareth, and Haifa.

"Thus his total strength amounted to some 4,000 sabres, 32,000 rifles, and 400 guns—representing a ration strength, south of the line Rayak-Beirut, of 104,000.

"I had at my disposal two cavalry divisions, two mounted divisions, seven infantry divisions, an Indian infantry brigade, four unallotted battalions, and the French detachment (the equivalent of an infantry brigade, with other arms attached), a total, in the fighting line, of some 12,000 sabres, 57,000 rifles, and 540 guns. . . .

"I was anxious to gain touch with the Arab Forces east of the Dead Sea," but experience showed that in order to guard communications of a force in the hills in Moab it was necessary to control the crossing of the Jordan at Jisr ed Damieh in order to prevent Turkish troops from crossing from the west to the east banks of the Jordan.

"The defeat of the VIIth and VIIIth Turkish Armies west of the Jordan would enable me to control this crossing . . . and would leave the IVth Army isolated if it continued to remain . . . south and west of Ammam. . . .

"I determined, therefore, to strike my blow west of the Jordan. . . ."

Practically "the whole of the Turkish Force west of the Jordan was enclosed in a rectangle 45 miles in length and only 12 miles in depth. The northern edge of this rectangle was a line from Jisr ed Damieh on the Jordan, through Nablus and Tul Keram, to the sea. All the enemy's communications to Damascus ran northwards from the eastern half of this line, converging on El Afule and Beisan, some 25 miles to the north. Thence, with the exception of the roads leading from El Afule along the western shore of the Sea of Galilee, his communications ran eastwards up the valley of the Yarmuk to Deraa, the junction of the Palestine and Hejaz Railways.

"Thus El Afule, Beisan, and Deraa were the vital points on his communications. . . .

"El Afule, in the Plain of Esdraelon, and Beisan, in the Valley of Jezreel, were within reach of my cavalry, provided the infantry could break through the enemy's defensive systems and create a gap for the cavalry to pass through. . . . Moreover, whichever route the cavalry followed, the hills of Samaria, or their extension towards Mount Carmel, had to be crossed before the plain of Esdraelon and the valley of Jezreel could be reached; and it was most important that the enemy should not be given time to man the passes.

"For this reason I decided to make my main attack in the coastal plain, rather than through the hills north of Jerusalem. . .

"The coastal plain at Jiljulieh, the ancient Gilgal, is some 10 miles in width. The railway from Jiljulieh to Tul Keram skirts the foothills, running through a slight depression on the eastern edge of the plain. To the west of this depression the Turks had constructed two defensive systems. The first, 14,000 yards in length and 3,000 in depth, ran along a sandy ridge in a north-westerly direction from Bir Adas to the sea. It consisted of a series of works connected by continuous fire trenches. The second, or Et Tireh system, 3,000 yards in rear, ran from the village of that name to the mouth of the Nahr Falik. On the enemy's extreme right the ground, except for a narrow strip along the coast, is marshy, and could only be crossed in few places. The defence of the second system did not, therefore, require a large force.

"The railway itself was protected by numerous works and by the fortified villages of Jiljulieh and Kalkilieh. The ground between our front line at Ras El Ain and these villages was open, and was overlooked from the enemy's works on the foothills round Kefr Kasim.

"By reducing the strength of the troops in the Jordan Valley to a minimum, and by withdrawing my reserves from the hills north of Jerusalem, I was able to concentrate five divisions and the French detachment, with a total of 383 guns, for the attack on these defences. Thus, on the front of attack I was able to concentrate some 35,000 rifles against 8,000, and 383 guns against 130. In addition, two cavalry and one Australian mounted divisions were available for this front.

"I entrusted the attack on the enemy's defences in the coastal plain to Lieutenant-General Sir Edward Bulfin, K.C.B., C.V.O., commanding the XXIst Corps. In addition to the 3rd (Lahore), 7th (Meerut), 54th, and 75th Divisions, which already formed part of the XXIst Corps, I placed at his disposal the 60th Division, the French detachment, the 5th Australian Light Horse Brigade, two brigades of mountain artillery, and eighteen batteries of heavy and siege artillery. . . .

"The concentration in the coastal plain was carried out by night, and every precaution was taken to prevent any increased movement becoming apparent to the Turks. Full use of the many groves round Ramleh, Ludd, and Jaffa was made to conceal troops during the day. The chief factor in the secrecy maintained must be attributed, however, to the supremacy in the air which had been obtained by the Royal Air Force. The process of wearing down the enemy's aircraft had been going on all through



An Albatros biplane brought down by a Bristol biplane at Gozel-Bazel, Palestine, on Oct. 10th, 1918. The pilot was captured by an Australian cavalry patrol before he was able to destroy his machine.

the summer. During one week in June 100 hostile aeroplanes had crossed our lines. During the last week in August this number had decreased to eighteen. In the next few days a number were shot down, with the result that only four ventured to cross our lines during the period of concentration. . . .

"Whilst the concentration in the coastal plain was nearing completion the enemy's railway communications at Deraa were attacked by the Royal Air Force. . . .

"The railway line and station buildings at Deraa were damaged by the Royal Air Force on Sept. 16th and 17th. . . .

"In the early hours of Sept. 19th El Afule and the headquarters of the Turkish VIIth and VIIIth Armies at Nablus and Tulkeram were bombed by the Royal Air Force with a view to disorganising their signal communications.

"At 04.30 the artillery in the coastal plain opened an intense bombardment, lasting fifteen minutes, under cover of which the infantry left their positions of deployment. Two torpedo-boat destroyers assisted, bringing fire on the coastal road to the north.

"The operations which followed fall into five phases.

"The first phase was of short duration. In 36 hours between 04.30 on Sept. 19th and 17.00 on Sept. 20th, the greater part of the VIIIth Turkish Army had been overwhelmed, and the troops of the VIIth Army were in full retreat through the hills of Samaria, whose exits were already in the hands of my cavalry.

"In the second phase the fruits of this success were reaped. The infantry, pressing relentlessly on the heels of the retreating enemy, drove him into the arms of my cavalry, with the result that practically the whole of the VIIth and VIIIth Turkish Armies were captured, with their guns and transport.

"This phase also witnessed the capture of Haifa and Acre, and the occupation of Tiberias, and of the country to the south and west of the Sea of Galilee.

"As the result of the rout of the VIIth and VIIIth Armies, the IVth Turkish Army, east of the Jordan, retreated, and Maan was evacuated.

"The third phase commenced with the pursuit of this army by Chaytor's Force, and closed with the capture of Amman, and the interception of the retreat of the garrison of Maan, which surrendered.

"The fourth phase witnessed the advance by the Desert Mounted Corps to Damascus, the capture of the remnants of the IVth Turkish Army, and the advance by the XXIst Corps along the coast from Haifa to Beirut.

"In the fifth phase my troops reached Homs and Tripoli without opposition. My cavalry then advanced on Aleppo, and occupied that city on October 26th.

"The attack in the Coastal Plain on the morning of September 19th was attended with complete success. . . .

"By 11.0 (on Sept. 19th) the 75th Division had captured Et Tireh. . . .

"Disorganised bodies of the enemy were now streaming across the plain towards Tul Keram, pursued by the 60th Division and the 5th Australian Light Horse Brigade. . .. Great confusion reigned at Tul Keram. Bodies of troops, guns, motor lorries and transport of every description were endeavouring to escape along the road leading to Messudie and Nablus. This road, which follows the railway up a narrow valley, was already crowded with troops and transport. The confusion was added to by the persistent attacks of the Royal Air Force, and Australian Flying Corps, from which there was no escape. Great havoc was caused, and in several places the road was blocked by overturned lorries and vehicles. . . .

"In the meantime the 7th (Meerut) Division and 3rd (Lahore) Division had entered the hills, and, in conjunction with the 54th Division, had pressed eastwards. By dusk the line Bidieth-Kh. Kefr-Thilth-Jiyus-Felamieh-Taiyibeh had been reached The 75th Division remained in the vicinity of Et Tireh in corps reserve. . . .

"Good progress was made on the night of September 19th and during the following day. The 53rd Division captured Kh. Abu Malul, and advanced their line in the centre. On their right Khan Jibeit was heavily counter-attacked on the morning of September 20th. The Turks succeeded in regaining the hill, but were driven off again after a sharp fight. . . .

"The 10th Division advanced in two columns, and by midday on September 20th the right column had reached Selfit and was approaching Iskaka, which was strongly held by the enemy. The left column reached Kefr Haris, which was only captured after heavy fighting. The 10th Division had already driven the enemy back seven miles. . . .

"On the left of the 10th Division the XXIst Corps had continued its advance in three columns. On the right the 3rd Division advanced up the Wadi Azzun. In the centre the Meerut Division moved on Kefr Sur and Beit Lid. The 60th Division and the 5th Australian Light Horse Brigade advanced along the Tul Keram-Nablus road on Messudie Station. By evening the line Baka-Beit Lid-Messudie Station-Attara had been reached. . . .

"Considerable confusion existed, however (on Sept. 20th), behind the enemy's rearguards. All day his transport had been withdrawing. The Messudie-Jenin road was crowded. Its defiles had been bombed continuously by the Royal Air Force, as had long columns of troops and transport moving on Nablus in order to reach the Beisan road. . . .

"Early on the morning of September 19th, before the infantry had advanced to the attack, the 4th and 5th Cavalry Divisions moved out of the groves round Sarona, and formed up in rear of the 7th (Meerut) and 60th Divisions. The Australian Mounted Division, less the 5th Light Horse Brigade, was on its way from Ludd. . . .

"By noon the leading troops of the Desert Mounted Corps had reached Jelameh, Tell ed Drurh and Hudeira, eighteen miles north of the original front line. After a brief rest the advance was continued. The 5th Cavalry Division moved north to Ez Zerghaniyeh. It then turned north-east, and, riding through the hills of Samaria past Jarak, descended into the Plain of Esdraelon at Abu Shusheh. The 13th Cavalry Brigade was then directed on Nazareth, the 14th on El Afule.

"The 4th Cavalry Division turned north-east at Kh. es Sumrah, and followed the valley of the Wadi Arah into the hills. The valley gradually narrows as the pass at Musmus is reached. . . .

"The 4th Cavalry Division then marched to El Afule, which it reached at 08.00, half an hour after its capture by the 14th Cavalry Brigade.

"In the meantime the 13th Cavalry Brigade of the 5th Cavalry Division, riding across the Plain of Esdraelon, had reached Nazareth, the site of the Yilderim General Headquarters, at 05.30. Fighting took place in the streets, some 2,000 prisoners being captured. Liman von Sanders had already made good his escape, but his papers and some of his staff were taken. This brigade then marched to El Afule; arriving there as the 4th Cavalry Division rode down the Plain of Jezreel to Beisan, which it reached at 16.30, having covered some eighty miles in thirty-four hours. The 4th Cavalry Division detached a regiment to seize the railway bridge over the Jordan at Jisr Mejamie.

"The Australian Mounted Division, which had followed the 4th Cavalry Division into the Plain of Esdraelon, was directed on Jenin, where the road from Messudie to El Afule leaves the hills. Jenin was reached at 17.30, and was captured after a sharp fight, a large number of prisoners being taken.

". . . within 36 hours of the commencement of the battle, all the main outlets of escape remaining to the Turkish VIIth and VIIIth Armies had been closed. They could only avoid capture by using the tracks which run south-east from the vicinity of Nablus to the crossing over the Jordan at Jisr ed Damieh. These were being rapidly denied to them.

"The first phrase of the operations was over.

"The enemy's resistance had been broken on September 20th. On September 21st the Turkish rearguards were driven in early in the morning. All organised resistance ceased . . .

"Since the early hours of the morning (of Sept. 20th) great confusion had reigned in the Turkish rear. . . .

"The disorganisation which already existed was increased by the repeated attacks of the Royal Air Force; in particular on the closely packed column of transport moving north from Balata to Kh. Ferweh, where a road branches off, along the Wadi Farah, to Jisr ed Damieh. . . . Nine miles from Kh. Ferweh, at Ain Shibleh, a road branches off to the north to Beisan. A mile beyond this point the Wadi Farah passes through a gorge. The head of the column was heavily bombed at this point. The drivers left their vehicles in panic, wagons were overturned, and in a short time the road was completely blocked. Still attacked by the Royal Air Force, the remainder of the column turned off at Ain Shibleh, and headed for Beisan . . .

"At 08.00 (on Sept. 22nd) a column, with transport and guns, 10 miles long, was reported by the Royal Air Force to be moving north along the Ain Shibleh-Beisan road, its head being 9 miles south of Beisan. The 4th Cavalry Division was ordered to send detachments towards it, and also to patrol the road, which follows the Jordan on its east bank, to secure any parties which might escape across the Jordan. . . .

"The Royal Air Force had proceeded to attack the Turkish column, which broke up and abandoned its guns and transport. . . .

"As a result of the defeat of the VIIth and VIIIth Armies, the position of the IVth Army east of the Jordan was no longer tenable, and by the morning of September 23rd this Army was in full retreat on Es Salt and Amman, pursued by the Australian and New Zealand Mounted Division, and bombed by the Royal Air Force. . . .

"The enemy retreated northwards along the Hejaz railway and the Pilgrim route in a disorganised state, harassed by the Royal Air Force and the Arabs. . . .

"Brilliant work has been done by the Palestine Brigade, Royal Air Force, and the Australian Flying Corps, not only during the actual operations, but in the preceding months. The process of wearing down the enemy's strength in the air had been continuous throughout the summer. Our ascendancy in the air became so marked towards the end of August that only a few of the enemy's aeroplanes were able to fly, with the result that my troops were immune from air attacks during the operations, and the whole strength of the Air Forces could be concentrated on the enemy in his retreat.

provided me with full and accurate information as to the enemy's

"Besides taking an active part in the fighting, the Air Force movements."

LORD WEIR ON THE FUTURE.

On Dec. 20th the Lord Weir, Secretary of State for the Air Force, visited the National Aeroplane Factory at Heaton Chapel, Manchester, and accepted an aeroplane which has been subscribed for at the works.

Lord Weir, after congratulating his hearers on being employed at the finest aircraft factory in the world, said he was one of those who believed that, whatever was done in other countries in an industrial sense, here in Great Britain we could do it better if we decided to do it at all.

Later Lord Weir was entertained at luncheon by the Lord Mayor of Manchester, and in an important speech he dealt with the part of the State in the future development of flying.

One is indebted to the "Times" newspaper for the following report :—

Lord Weir first thanked the Lord Mayor and Corporation for their hospitality and for the tribute which had been paid to the work of the Royal Air Force. He called attention to the magnificent contribution of the Dominions, and mentioned that no less than 15 per cent. of the total number of flying officers in France were of Canadian origin. Referring to the expansion of the Air Force during the war, Lord Weir stated that in August, 1914, the Flying Services consisted of 285 officers and 1,853 other ranks. In November, 1918, the strength of the Royal Air Force was 30,000 officers, 260,000 men, and about 30,000 women and boys.

Dealing with the future of civil aviation, Lord Weir said :—

Any adequate survey of the future of civilisation must involve an inquiry into the future of transport. For transport is that which welds civilisation together, and its function in human progress is extremely important. We have hitherto had transport by land and transport by water, and to-day we have, in actual practice, transport by air. It may well be—but I am not here as a prophet—that the new mode of transport will one day rival, and even surpass, the other two.

At any rate, the compelling influence of a very grave national danger has resulted in an extensive development of aviation which, when compared with the development of any other scientific and economic factor in our lives, seems not only astounding, but somehow artificial. Nevertheless, it has been a real development. The thing exists; and the problem before us is the problem of transforming that which has exclusively served the ends of frightfulness into an organism which will serve in the completest way the infinitely more valuable ends of peace.

Prodigious Strides.

I want to-day to visualise for you, if I can, the method and the extent to which a nation inheriting from the war a legacy of aerial experience fuller, perhaps, than that of any other nation, can reinvest and adopt that inheritance for the bettering of mankind. Let me give you one little indication of the progress we have achieved in the mere mechanics of aviation. And let me admit that even those of us who live in the heart of this great business have scarcely grasped the significance of the prodigious strides made during the later months of the war. I will offer you just a single fact.

We now possess aeroplanes which carry a crew of seven and passengers to the number of 30, which climb to a height of 10,000ft., which travel at a speed of 100 miles an hour, and which can make a journey of 1,200 miles without a stop. We possess such machines for travel over land, and similar machines which, if necessary, can come down on the surface of the seas, float, and rise again with their full load. We have designed and constructed these machines; we have tested and tried them in every way; and, either actually delivered or under construction, we possess them in substantial numbers. So much for the mechanical or constructional side of aviation.

But aviation must be viewed in two aspects—the constructional aspect and the operational aspect. There is the technique of the material, and there is the technique of the use of the material. It is not enough to make machines which are marvels. We must be able to navigate the machines and organise that navigation, to the last limit of the possibilities of the machines.

This is what I call the operational aspect; and I have to say with the strongest emphasis that there has been, and still is, a serious danger of it being overlooked, or at all events slighted, in favour of the constructional or manufacturing aspect. There is a serious danger that the adventurous and sometimes rather reckless commercial enterprise of the air industry may result in disappointments, unless the operational side of aviation is kept prominently in view. I perceive no immediate limitation on the constructional side; but I do perceive limitations on the operational side.

The technique of flying and the organisation of air transport still demand long study and many experiments for their perfecting. True, wondrous "stunts"—I feared that I might succumb to that popular word, and I have done so (laughter)—wondrous "stunts" are performed in the air, and these "stunts" have been immediately useful in the art of war, and they will continue to be useful for the testing of machines. But gymnastics and acrobatics in the firmament have really little to do with the operational side of aviation.

The air traveller of the future will have no desire to take part in a circus. He will want to be sure that on a given day, to be settled in advance, he can leave, say, London at a certain hour in the morning and arrive, say, at Marseilles at a certain hour in the afternoon, whatever the weather.

Warning Against Impatience.

I am an enthusiastic optimist about the future of aviation, but I hope my optimism is sane—may I divulge the fact that I come from Glasgow?—I say I hope my optimism is sane, and therefore I shall venture to insist that at this highly critical period in the history of the new transport nothing but harm can come from not facing the facts; and I will add my opinion that the future may be gravely prejudiced by impatience for showy results.

The success of the operational side of air transport will depend upon measures which cannot be carried out in five minutes. These measures are :—The development of the navigational instruction by really sound and severe navigational training, the creation of an energetic meteorological service specially designed to help air transport, the adoption of improved systems of wireless telegraphy and telephony, and the adoption of a first-class system of day and night marking of landing places and aerodromes.

If these measures are taken, I am quite clear that five years hence there will be no more difficulty in navigating an aeroplane over a long course in foggy or otherwise bad weather than there is now in navigating a ship. If these measures are not taken, if hard and continuous experimental study is not put into the problems yet unsolved, then trouble, delay, and discouragement will certainly ensue.

I am happy to say that already we have machines so devised that they can land safely at definite gliding angles entirely without human control. This means that, when the pilot can set his instruments by means of a kite balloon anchored in clear air, he will be able to land with safety in an aerodrome completely fogbound.

Having stated certain general aspects of the matter, I now come to the question : What part is the State to play in the developments which I have foreshadowed? This question I am well aware is as prickly as a hedgehog.

There is only one satisfactory way of handling hedgehogs—and that is, to seize them with a peculiar light firmness. If you are in two minds about the prickles of a hedgehog, you are lost. I therefore seize this particular hedgehog with a peculiar light firmness. It has been argued that, since the whole of aviation is actually in the hands of the State, the State can start fair and run the whole of aviation in the future as a Government monopoly, just as it runs the Post Office, and as—I hear from Dundee—it will shortly run the railways.

Well, I have had considerable experience of private enterprise, and I have had a shorter but far more exciting experience of Government enterprise. Both, in my opinion, decidedly have points. But I do not think that the best ends of civilisation will be served by keeping civil aviation for a Government monopoly.

I am convinced that co-operation between the activities of the State and the activities of the private firms will produce the finest results. The State must be the pioneer—it must help, it must encourage, it must guide, it must exercise control, it must be in a position to say "thou shalt" and "thou shalt not"—but emphatically it must not monopolise. And I am sanguine enough to conceive a Government Department which will be, not an autocrat, but an elder brother to both the constructional and the operational sides of aviation.

The New Air Department.

I will tell you one or two things about such a Department. It must be in the charge of few men, but of the best available men; and they must be highly paid. It must be in the charge of men who are accustomed to wait patiently for results, not of men who want to be in the middle of next week before they have got over Sunday. It must be broad-minded enough to engage the interest and enthusiasm of the biggest people for the biggest schemes. For example—and solely by way of illustration—I would like to see the big shipping and other existing transport organisations actively interesting themselves in the development.

Such a Department must strive to acquire the best qualities of a private business, and, in a word, it must function as far as possible like a private business, for a public end. It would, perhaps, be alien to our grand bureaucratic traditions, but I should not mind that, for I think it would represent the new spirit which, as a result of war experience, is coming over this country. The new Department should, of course, spring out of the existing Air Ministry, which must be reconstituted and reorganised, so as not only to control the administration of the Royal Air Force, but to act as the supreme authority for the development of civil aviation.

The first essential step of the new Ministry should be to organise international flying—flying between different countries. This will involve an international aircraft Convention. I may

say that we have already drafted the articles of this Convention, which is being submitted to our Allies. If they substantially approve it, an international air conference will be held; and I have reason to anticipate that within the next four or five months the principal nations of the world will have reached agreement on this momentous matter.

Similarly, domestic legislation will have to be passed for the regulation of flying in this country. The draft Bill is now ready, and I anticipate that within a few weeks of the opening of the new Parliament a useful Act will come into force.

It will be appreciated that until this Convention and this domestic legislation become operative there can be no private flying at all, either international or in this country. In many parts of the Continent a state of war still exists; and, moreover, even if a state of war did not exist, I should oppose any private flying until suitable legislation was passed. It would, indeed, be unfortunate if the development of civil aviation was retarded owing to the effect of a series of fatal accidents due to a lack of absolutely necessary regulations.

Eager aviators may chafe under the delay, but I would remind them that, legislation or no legislation, the weather of this unique island is apt to be so variegated, violent, and undependable that during the next three months serious flying for transport purposes would anyhow be impossible with our present imperfect navigational arrangements.

Research and Training.

As a part of the help, encouragement, and guidance which I mentioned a moment ago the new Department will have to provide a thoroughly efficient technical section for research and experimental purposes, which section would work in closest touch with private industry. Substantial public expenditure would be necessary for the opening up of new avenues of progress and for the development of what is proved to be good in private enterprise.

Further, the State should acquire in permanence a large proportion of the existing military aerodromes, and should render them available for general use by leasing sheds to private operational companies and merely charging a fee for landing. In this way, while the State would not suffer, private enterprise would be relieved of an exceedingly heavy capital charge.

The Department should undertake the training of all pilots to be employed on public transport services, whether such services are in the hands of the Department itself or in private hands. Such a course would fulfil two purposes. It would secure public confidence in the efficiency of the pilots, and it would provide a reserve of pilots for the Royal Air Force in times of emergency.

From the superabundance of machines at its disposal upon the conclusion of peace, suitable for conversion to commercial use, the State should be ready to dispose of a considerable number at a low price to private operational companies. The new Department should undertake the mapping out and the marking of aerial routes, the lighting of the same by day and by night, and the inspection and certification of all private aircraft. And, above all, it should attend to the special meteorological developments which I have already mentioned. Finally, the new Department must be ready itself to undertake mails, goods, and passenger services wherever private enterprise may be found lacking.

I have merely outlined, in a manner necessarily somewhat vague, the main contours of the vast subject upon which I have ventured to address you, and I cannot on this occasion do more. I will add just a word about a point which is doubtless in the acute and active mind of every business man here—finance!

The scheme which I have indicated will cost money—a lot of money, according to pre-war standards, but a very little according to the standards of war. And however much it costs, it will not be expensive, for it will serve two ends, of which the value is beyond money.

First, it will provide this country with a new and tremendous industry, which, in a supreme degree, will constitute and maintain the arterial system of the great civilisation of the future; and, secondly, it will do honour to, consummate, and justify the magnificent work begun by those who are dead, and whom we mourn. It is not given to me to use fine phrases, and Britons are not accustomed to express their deepest feelings with much eloquence, but I must point out to you that our present achievement in the air, and all our further achievement, has been, and will be, built upon sacrifices, upon martyrdoms, upon sudden and violent deaths, upon incalculable devotions, not only beyond the seas, but here at home. We owe the profoundest loyalty to those who are gone, and, when we plan for the years ahead, let us not forget to be worthy of them.

A VISIT TO GERMANY.

From an officially issued account of the Allied Naval Commission's activities in German waters, it has been gathered that the original plan was to send this Commission to the German seaports and air stations via the Western Front and Germany. Owing to the unsettled state of the country and the difficulty of keeping in communication with the Commission, it was decided that the sea journey was the simplest. The credit for this is given to Vice-Admiral Sir Montague Browning, K.C.B., M.V.O.

The members and staff of the Commission represented five of the Allied Countries, and the following "technical experts"—as the official account has it—were present at the various Conferences:

Brig.-Gen. E. A. D. Masterman, C.B.E., R.A.F., who has been connected with airships since the early days, was concerned with the ill-fated "Mayfly." Lighter-than-air-craft was also represented on the Commission by Comdr. W. C. Childs, U.S.N. British Naval Aviation was represented by Col. R. H. Clark-Hall, D.S.O., R.A.F., who, as Senior Officer of the Sub-Commission, had charge of the inspection of seaplane stations. Lt.-Comdr. John Graham Bower, D.S.O., R.N., an early naval pilot of aeroplanes, who has done notable work in E-boats and K-boats during the war, had charge of the submarine affairs.

On Dec. 5th the inspection of the airship and seaplane stations began. These inspections at times involved journeys of considerable distance, and, although special trains were provided, progress, owing to the condition of rolling-stock and engines, was slow. The official account refers as follows to these inspections:—

"Warship and merchant ship inspections were over at Wilhelmshaven in a couple of days, but the visits to air stations on the North Sea took some time longer. Borkum, Heligoland, and Sylt were reached by destroyer; most of the others by land. Discipline and order were found much better in both airship and seaplane stations than in the warships, and in most of these it was very evident that every endeavour had been made to live up to the letter of the armistice agreement. The Norderney seaplane station—on the island made famous in 'The Riddle of the Sands'—was reported as comparing most favourably with any other of the kind in France or England, while the great Nordholz Zeppelin station is beyond comparison the finest in the world. It was from here that practically all of the England-bound raiders started, and not the least interesting sight observed there by the Sub-Commission was the famous 'L-14,' with 24 visits to England to its credit. It was practically the only survivor of the first raiders, all of the rest having perished in one way or another. The latest airships—such as the mighty 'L-71'—outclass it completely for power, speed, size, and stability."

It is now confirmed that in the raid on Tondern last summer by seaplanes from "Furious," two sheds and airships—said to be Zeppelins—were destroyed.

Concerning submarines, things do not appear to have been so satisfactory, as the following quotation shows:—

"The Submarine Commission, under Lt.-Comdr. Bower, pushed its investigations assiduously at Hamburg, Bremen, and other points, with the result that some scores of U-boats—mostly nearing completion—hitherto undeclared by the Germans, were found and reported. Admiral Götte protested to the last against giving up these, but at the final conference the Allied Commission carried their point, and the potential pirates will be delivered in British ports as fast as they become ready for towing."—S. F. B.

THE FLIGHTS FROM ENGLAND TO INDIA.

With reference to the various paragraphs published recently concerning Maj.-Gen. W. G. H. Salmond's flight to India, the following particulars are now to hand concerning this flight

The time taken on the flight from Cairo to Delhi was 47 hrs. 21 mins., the distance being 3,233 miles. The longest single flight, from Damascus to Baghdad, a distance of 495 miles, occupied 6 hrs. 53 mins., while the next longest, from Karachi to Nasirabad (485 miles) took 6 hrs. 35 mins.

The country over which the machine passed appeared to be principally desert, dotted here and there with villages. A rat, which boarded the machine at Charbar, and was heard nibbling, is stated to have fallen out while the aeroplane was passing over the Sind desert at 7,000 ft.

A slight delay was caused as the machine had to undergo some repairs, owing to the use of rough landing ground, at Bandar Abbas.

Maj.-Gen. Salmond in a statement concerning his flight to Calcutta said that the original idea was to carry out a tour of inspection of Mesopotamia, but since the conditions were favourable, the Air Ministry decided that the flight should be extended to India.

On Gen. Salmond's arrival at Delhi he was met by Sir Charles Monro, Commander-in-Chief. The arrival was witnessed by a great number of people, including several members of the Headquarters Staff.

It is stated that this flight has aroused much interest in aviation, and proposals for an internal aerial mail service have been submitted to the Government.

Concerning the flight to India of the bigger Handley Page—H.M.A. "Carthusian"—carrying Gen. McEwen and 14 other people, the Air Ministry announced that on Dec. 19th this machine landed at Rome after a flight from Pisa.

A Reuter's message from Malta states that this machine arrived at that place on Dec. 26th. It has since reached Egypt.

ELECTION RESULTS.

So far as the Parliamentary candidates who have been connected with aerial matters are concerned, the following were declared elected on Saturday, Dec. 28th, 1918 :—

	Majority.
Islington, East, Lt. A. Baldwin Raper, M.P. (Co U.)	3,384
Kensington, North, Lt.-Col. Alan Burgoyne, M.P. (Co. U.)	9,523
Walton, Lt.-Comdr. H. W. S. Chilcott, M.P. (Co U.)	6,877
Leyton, East, Lt.-Col. E. J. L'E. Malone, M.P. (Co. L.)	200
Rochester, Chatham, Lt.-Col. J. T. C. Moore-Brabazon, M.P. (Co. U.)	7,320
Leith, Capt. Wedgwood Benn, D.S.O., D.F.C., M.P. (L.)	2,725
Hertford (E.) N. Pemberton-Billing, Esq., M.P. (Ind.)	2,470
Ilkeston, Derby, Maj.-Gen. J. E. B. Seely, M.P. (Co. L.)	1,698
Twickenham, W. Joynson-Hicks, Esq., M.P. (Co. U.)	11,192
Rugby, Maj. J. L. Baird, C.M.G., D.S.O., M.P. (Co. U.)	3,926

Capt. G. Aston (Paddington, North), E. W. Petter, Esq. (Eristol, North), and Lt.-Col. Thomas Carthew, D.S.O., unfortunately failed to obtain seats in the House.

THE O.B.E.

The King has been graciously pleased to institute a Military Division of the Most Excellent Order of the British Empire to date from the creation of the Order—i.e., June 4th, 1917.

The following classes of persons will be eligible for appointment to the Military Division of the Order :—

All commissioned, warrant, and subordinate officers subject to the Naval Discipline Act or employed under the orders of the Admiralty, and all commissioned and warrant officers recommended by any Commander-in-Chief in the field or elsewhere, or by the General Officer Commanding, Independent Force, Royal Air Force, or employed under the War Office or Air Ministry, or under the Administrative Headquarters of Dominions or Overseas Forces, or employed under the Ministry of Munitions or the Ministry of National Service on work which, but for the creation of those Departments, would have been performed by the War Office; and all members of the Naval, Army, Dominions, or Overseas Nursing Services, or officials of the Women's Royal Naval Service, Queen Mary's Army Auxiliary Corps, or the Women's Royal Air Force, and such commandants of the Women's Legion or similar organisations as are under contract with or employed by the Admiralty, War Office, or Air Ministry.

Persons already appointed to the Order who are qualified for the Military Division will, on the recommendation of the First Lord of the Admiralty, the Secretary of State for War, or the Secretary of State for the Royal Air Force, as the case may be, be transferred to the Military Division.

The Insignia for both Military and Civil Divisions will be the same, but the ribbon of the Military Division will be distinguished by a vertical red strip in the centre of the existing ribbon.

THE AWARD OF "1914-1915 STAR."

His Majesty the King, having been pleased to approve the grant of a distinctive decoration to the forces which took part in active operations of war up to Dec. 31st, 1915, the following regulations for the award of the decoration as regards the Navy are issued for information :—

1. The decoration will be a Star in bronze, similar in type to the "1914 Star," but bearing distinctive marks as to date. Those entitled to the "1914 Star" will not be eligible for the new decoration.

2. No clasp will be issued with the Star.

3. The riband will be red, white and blue, shaded and watered.

4. Provided the claims are approved by the Admiralty and subject to the limitations in clause 5, the Star will be granted to the following :—

(a) All officers and men of the R.N., R.M., R.N.A.S., R.N.R., R.N.V.R., R.I.M., and Dominion Naval Forces, who were mobilised and served (1) at sea or (2) on shore within the theatres of military operations.

(b) Trained pilots and observers and men of the R.N.A.S. employed in flying from Naval air stations or oversea patrols.

(c) Mercantile marine officers and men serving under special Naval engagements. (Form T.124 and its variants.)

(d) Canteen staffs who have served in a ship of war at sea.

5. The following service does not qualify :—

(a) Service in depôt ships except those which go to sea, boom defence vessels, examination vessels and other craft employed on harbour service.

(b) Service at shore basis and depôts except those within theatres of active military operations.

(c) Services of a temporary and special nature in ships of war or theatres of operations—e.g., casual inspections and inquiries, purchase of material, passage, etc.

6. Desertion or dismissal with disgrace since the date of the qualifying service forfeits the decoration.

7. The decoration earned by officers and men deceased will be issued to their legatees or next-of-kin entitled to receive them.

8. A further announcement as to the wearing of the riband will be made when it is ready for issue, and no applications should be made pending such notification.

9. For the purpose of this Order the definition of "theatres of war" is as in Appendix "A."

APPENDIX "A."

For the purpose of this Order the definition of "theatres of war" will be as follows :—

1. Western European Theatre.—To include all operations in France and Belgium from midnight Nov. 22nd-23rd, 1914.

2. Eastern European Theatre.—To include all operations in (a) Greece, Macedonia, Serbia and Bulgaria from Oct. 5th, 1915; (b) Gallipoli from Apr. 26th, 1915, including Ægean Islands, etc

3. Egyptian Theatre: To include all operations against Turco-German forces from Nov. 5th, 1914; also operations against Senussite force in Western Egypt and on the borders of Cyrenaica, from Nov. 3rd, 1915, but excluding operations for which the Sultan's Sudan medal has been awarded.

4. African Theatre.—To include all operations set forth below, but excluding local military operations against native tribes or rebels : (a) British East Africa, German East Africa, Rhodesia, Nyassaland and Uganda and African lakes from Aug. 20th, 1914; (b) German South-West Africa and on the adjacent borders of the Union of South Africa from Aug. 20th, 1914, to July 9th, 1915; (c) Kamerun and/or Nigeria Frontier from Aug. 24th, 1914; (d) Togoland from Aug. 7th, 1914, to Aug. 26th, 1914.

5. Asiatic Theatre.—To include operations : (a) In Mesopotamia from Nov. 6th, 1914; (b) at Tsin-Tau from Sept. 23rd, 1914, to Nov. 7th, 1914.

6. Australasian Theatre.—To include all operations in (a) German New Guinea and Bismarck Archipelago, as follows : (1) New Britain from Sept. 11th, 1914, to Sept. 21st, 1914; (2) New Ireland from Sept. 16th, 1914, to Oct. 18th, 1914; (3) Kaiser Wilheimland on Sept. 24th, 1914; (4) Admiralty Islands on Nov. 21st, 1914; (b) Nauru on Nov. 6th, 1914; (c) German Samoa on Aug. 29th, 1914.

THE DEATH OF THE LADY VICTORIA BRADY.

The Lady Victoria Brady (née Pery), daughter of the Earl of Limerick, died in New York early last week from pneumonia, the result of influenza. In 1913 and 1914 she was a passenger with Mr. Gustav Hamel in many flights. With him she looped the loop, the second woman in the world to have done so. Vivacious and charming, she was popular with all those who knew her, and her departure to the United States as the wife of an American named Brady, was regretted by all. Her brother, the Viscount Glentworth, an officer in the R.A.F., was killed in an aerial fight in France in the early part of the present year.

THE RE-BURIAL OF M. PEGOUD.

Lt. Fonck, who has made a great reputation as an aerial fighter during the war, is to bring the body of M. Pégoud, famous in past days for his experiments in the air, from Belfort to Paris by aeroplane, where it is to be re-buried. M. Pégoud was killed in an aerial fight over Belfort in September, 1915.

A FLYING ACCIDENT TO AN AMERICAN GENERAL.

Brigadier-General Rhodes, an American delegate on the Armistice Commission, was being conveyed in a British aeroplane from Trêves to Paris on Dec. 22nd when a heavy fog rose. The pilot, Lt. Gilpin, apparently losing his way, came close to the ground without realising it. The machine when near Louvres ran into the ground at full flying speed, the pilot was killed and General Rhodes was seriously injured.

THE LONDON FIRE BRIGADE AND AIR RAIDS.

On Dec. 27th a list of members of the London Fire Brigade, who have been commended for rescue work undertaken during 24 air raids, was published.

Splendid work has been carried out by the firemen amid much difficulty and danger. Over and over again engines and men turned out to deal with fires or carry out rescue work while bombs were falling.

Many firemen were killed and maimed owing to enemy aircraft dropping bombs over places where they were at work, but this could not be recorded at the time.

The list of commendations contains the names of 51 firemen. In one case 18 lives were saved by two members of the brigade in Lamb's Conduit Passage, W.C., and in another 14 persons were rescued from a perilous position, after a bomb had dropped in Southwark Street, S.E., by the efforts of six firemen.

THE LEAGUE OF NATIONS.

Concerning the League of Nations, Mr. J. H. Thomas, in a letter to Lord Robert Cecil, says that the events of the past four years have proved that a League of Nations is the only safeguard against war. In a reply to this letter Lord Robert Cecil, who was recently appointed to take charge of all questions concerning the League of Nations which may arise at the coming Peace Conference, states that, among other matters, international rivers and railways, traffic by sea or air, postal, telegraphic and radiographic communications, sanitation, and, above all, labour conditions all over the world can only be handled by such a body.

TO THE NORTH POLE BY AEROPLANE.

The Aero Club of America have decided to organise an expedition into the Arctic regions under the command of Capt. Bartlett, in order that an attempt may be made to fly to the North Pole in an aeroplane. The club has already undertaken to provide, by private subscription among the members, a sum of $250,000 (£50,000) to cover all the necessary expenditure. The idea is said to be due to Rear-Admiral Peary, U.S.N. The notions of aircraft expenses seem primitive.

A ship is to be sent in June next year to Etah, 600 miles from the North Pole. A large seaplane and several small aeroplanes are to be carried, the former for the actual flight over the Pole and the latter for the carrying out of preliminary investigations. A base is to be established at Cape Columbia, from which the large seaplane is to attempt to fly over the Polar area to Cape Chelyuskin, in Siberia.

Captain Bartlett, who accompanied Captain Peary, U.S.N., to the North Pole, was born in Newfoundland, but became a naturalised American when he first took part in Polar exploration.

THE ATLANTIC FLIGHT.

According to the "Times" correspondent, Lt.-Col. Raymond Collishaw, D.S.O., D.S.C., D.F.C., R.A.F., who is now on his way to Vancouver, Canada, is to attempt the Atlantic flight next April. The report does not say from which side he will start.

It is also stated that Lt. Patrick O'Brien, R.A.F., who recently escaped from German captivity, will make an attempt on this flight. He will be accompanied by Capt. I. F. Fuller, U.S. Air Service, and Lt. C. C. Robinson, R.A.F.

ANOTHER AERIAL ESCORT.

On the occasion of the recent visit of President Wilson to London an aerial escort was provided by the Naval Branch, R.A.F., and also by the French to assist the destroyers in convoying "Brighton"—the ship in which the President crossed from France to Dover.

At Charing Cross Station Lord Weir, Secretary of State for the Air Force, was among those who received the President, and outside the station various members of the U.S. Air Service awaited the arrival of Mr. Wilson. Part of the route was lined by the R.A.F. Several aeroplanes gave exhibitions of flying over the route.

THE PRIME MINISTER'S DINNER.

The Prime Minister entertained the President of the United States to dinner at 10, Downing Street, on Saturday, Dec. 28th, to meet the members of the Imperial War Cabinet. Invitations were issued to the following among others:—Rt. Hon. Lord Weir and Maj.-Gen. Sykes.

THE ARABIAN WAR.

A correspondent of the "Times," in an article published recently, stated that during the bombardment of Jeddah, the port of Mecca, in May, 1916, by the Royal Navy, an R.N.A.S. seaplane carrier, which was passing up the Red Sea at the time, from Aden to Sheik Said, obligingly lent her aid. On the afternoon of May 16th one of her seaplanes dropped bombs—all they possessed—upon the enemy, machine-gunned his troops, and took many useful photographs. From this correspondent's account the appearance of this seaplane appears to have broken the enemy's resistance, for at sunset of the same day the city surrendered.

GERMAN BOMBING MACHINES.

Now that hostilities have ceased, the large bombing machines belonging to the German Flying Corps are stored in the great hall at Döberitz.

One machine had a wing span of 160 ft., and cost £50,000 to build. The machine had not been in commission, but had had several trials, the results of which are unknown. It is understood that a new series of raids was to have been made upon Paris by machines of this class.

LAWS OF THE AIR.

When the future international laws are framed by the Inter-Allied Aeronautical Conference, which is to sit in Paris in the spring of 1919, it is practically certain that it will be laid down that every machine entering England is to be examined at a specified aerodrome on the coast by Customs and other officials.

Pilots' papers will have to be in accordance with certain international standards, which will be recognised by all contracting countries. These, at the moment, include Italy, France, Belgium, Holland, Denmark, Sweden, U.S., and Great Britain. In all probability Austria, Germany, and Turkey will be forced to abide by the regulations laid down.

Pilots arriving at any international aerodrome will have the right to receive the latest meteorological information, and will be informed as to the exact route from place to place, as there will be certain towns and areas in each country over which no civilian aviator will be allowed to fly.

It is probable, for instance, that the route from London to Birmingham will be on the east of the railway line, while the return journey will be made on the west side. Railways will undoubtedly figure largely in cross-country air-routes, advantage being taken of the lighting and well-defined tracks.

IN MEMORY OF WILBUR WRIGHT.

On Dec. 22nd an important function took place at Le Mans, in France, the scene of the early flights of Wilbur Wright, in Europe, when a commemoration in honour of the Marquis de la Fayette and Wilbur Wright was celebrated in the presence of a large and enthusiastic crowd. French, American, and Polish troops rendered military honours, and speeches were delivered by M. Simon, Minister of the Colonies, by M. Painlevé on behalf of the Government, by Mr. Sharp, the United States Ambassador in Paris, and by Major Brocard on behalf of the Air Minister.

The ceremony included the laying of the foundation-stone of a monument to Wilbur Wright, erected by the people of Le Mans in the Place des Jacobins, at the foot of the rising ground on which the cathedral stands, and the presentation to the town of a commemorative tablet by the Aero Club of America and of a memorial tablet and bronze wreath from the citizens of Dayton, Ohio—Wilbur Wright's birthplace.

Among others present were Baron d'Estournelles de Constant—one of Wilbur Wright's first passengers—General Glenn and General Reed, of the United States Army, the latter representing General Pershing, General Mazel, of the French Army, M. de Saint Blancard, of the Aero Club of France, and the following representing the Aero Club of America:—Mr. S. B. Veit, Dr. A. L. Hipwell, Capt. John Weare, Mr. Louis D. Beaumont (Dayton, Ohio).

The Baron d'Estournelles de Constant delivered an oration at the La Fayette statue, in which he said that ten years ago the people of the Sarthe had adopted Wilbur Wright as their son and had supported his early experiments against the mockery of the sceptical world. Now America had brought to France a reward for those sympathies and had contributed to the collapse of German militarism.

At the laying of the foundation stone the American Ambassador recalled how on December 17th, 1903, the first flight had been made by the brothers Wright, when a distance of 350 ft. was covered at Kitty Hawk.

It is said that the Wilbur Wright statue will be the work of M. Paul Landowski, who was responsible for the great Reformation Memorial at Geneva, and who is a possessor of the Prix de Rome. M. Landowski is a serjeant in the first line Engineering Corps of the French Army, and has been awarded the Croix de Guerre. It is said that the statue will be 36 ft. high, and will consist of a broad base from the centre of which will rise a gigantic pinnacled rock symbolising the summits of the earth, and on the top of this will be a figure of a man striving to climb still higher.

IRISHMEN IN THE ROYAL AIR FORCE.

During the last session of the House of Commons, Major Baird stated in a written reply to Mr. Boland that the number of men of Irish birth in the two branches of the Flying Service at the outbreak of war was 42; the number then serving was 5,464.

A HARLAND AND WOLFF BIPLANE.

The trial trip took place at Belfast on Dec. 20th of one of the largest types of aeroplanes in the service of the Air Ministry. Constructed by Messrs. Harland and Wolff at their new aircraft factory, the machine is alleged to be 92 ft. long and 126 ft. between the tips of the wings. It will be driven by eight Rolls-Royce engines, and will carry fifteen hours' fuel supply—over a thousand gallons of petrol. At a height of 1,000 ft. it will travel about a hundred miles an hour. All this according to the "Daily Telegraph." Originally designed for the purpose of bombing Berlin, with a fighting crew of nine, it was decided after the armistice was signed to devote the machine to the Government Aerial Postal Service with India. Already several similar machines are engaged on that work, and have demonstrated their utility, the service having proved a great success. The pilot was Mr. C. B. Prodger, who has already made many memorable flights, and who will use a machine of the same type when he takes part in the great Transatlantic contest, for which he has entered. The trial trip attracted an extraordinary amount of attention in the city, where it was not generally known that the aircraft industry had been started by Harland and Wolff, who had built 150 machines. All the foregoing is of daily press origin, and the machine appears to be a Handley Page built in Belfast.

A LARGE CURTISS SEAPLANE.

Mr. Glenn H. Curtiss has recently supplied the United States Navy with a large seaplane, known officially as the Colossus. It is a biplane with three motors, the power of which is not stated, and measures in span 126 ft. Its length is 70 ft. and its depth from the top plane to the keel is 25 ft. Machine-guns are carried in a cockpit on the top plane and in the bow of the boat. Its speed is 80 miles an hour and its rate of climb is 2,000 ft. in ten minutes, neither of which seem exciting.

At Rockaway and at Baltimore this seaplane has carried 50 men in sustained flight. Mr. Curtiss, speaking of this machine, says that it could fly the Atlantic with ease, but it is not suggested that the U.S. Navy intend to make an attempt to win the "Daily Mail" Prize.

THE BOMBARDMENT OF CALAIS.

During the war Calais lost in men, women, and children 229 killed and 423 injured by bombardment from the sea and the air.

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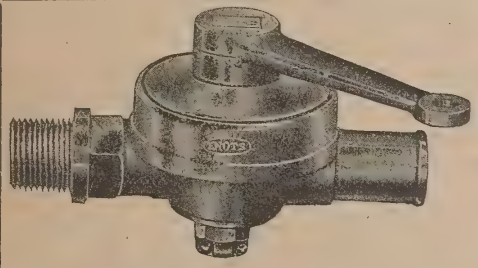
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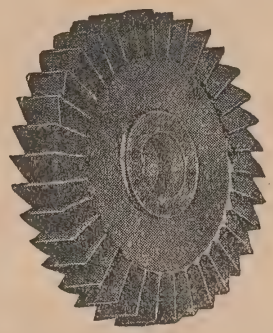
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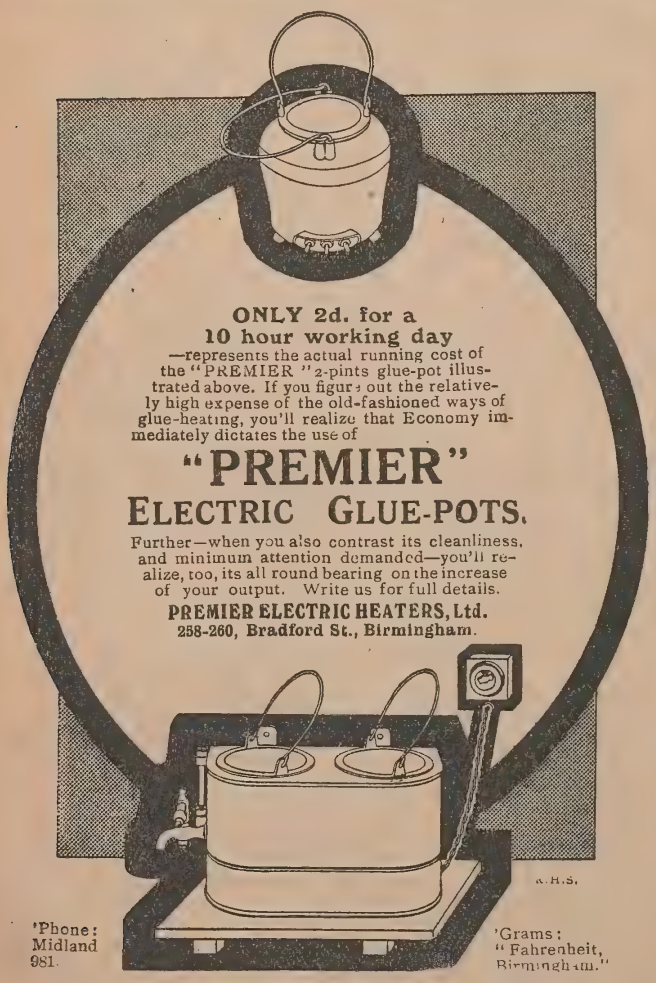
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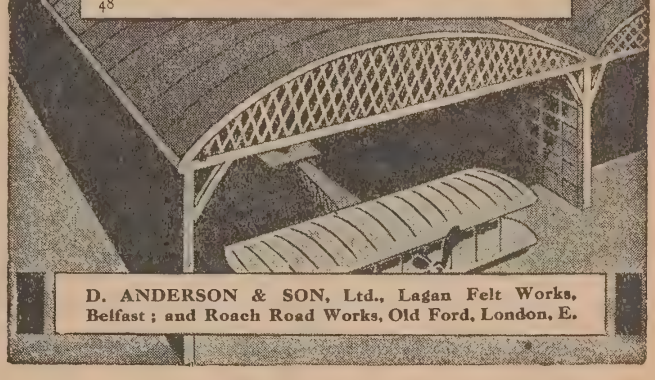
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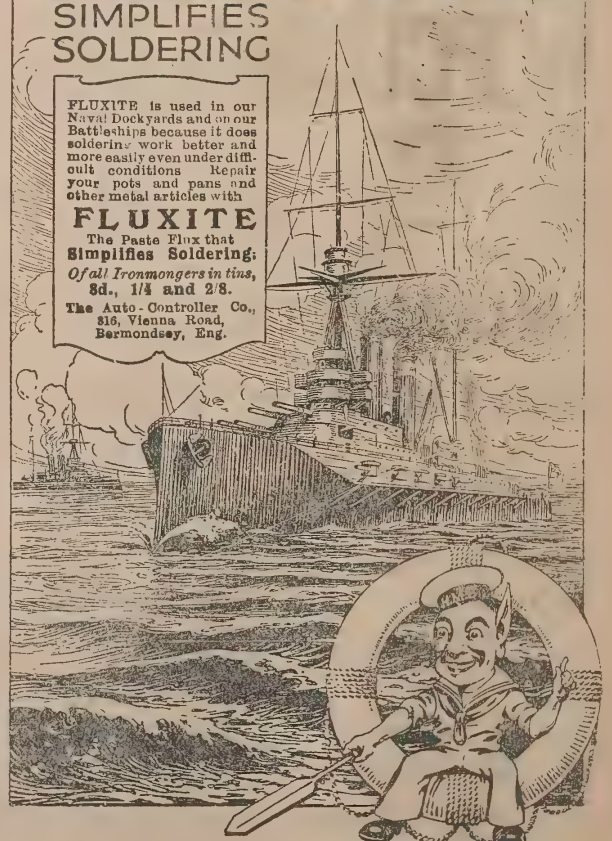
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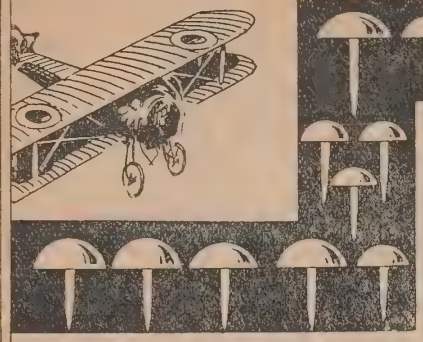


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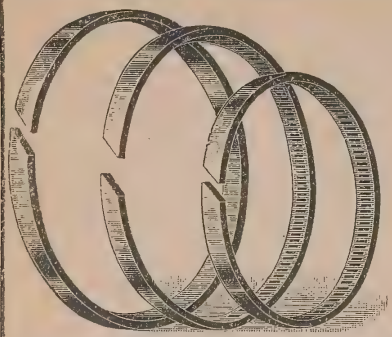
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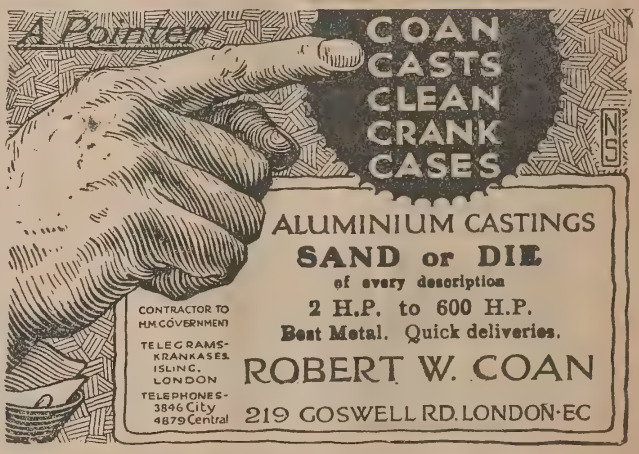
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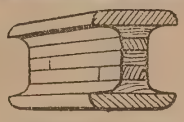


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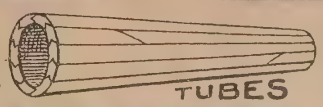


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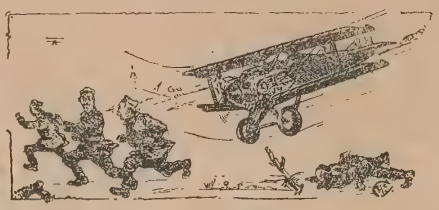
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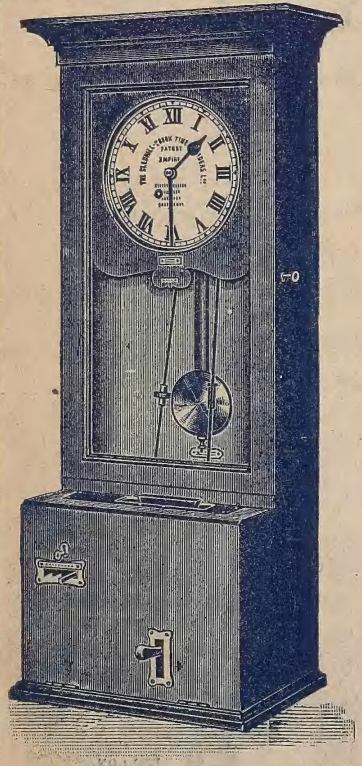
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